THE LITERARY MAGAZINE.

JULY 1736.

ARTICLE XXXVII.

The following Abſtract was ſent us by one of our Correſpondents, and, as it is uſeful, we hope it will oblige the Publick.

De Secretione Humorum è Sanguine ex Solidorum Fabricâ præcipuè & Humorum indole demonſtrata. Auctore Joanne de Gorter, *cui acceſſit ejuſdem Oratio de dirigendo Studio in Medicinæ Praxi.* Lugduni Batavorum *apud* Janſonios Vander Aa 1727. That is, *A Treatiſe on the Secretion of Humours from the Blood, demonſtrated from the Structure of the Solids principally, and from the Nature of the Humours. By* John de Gorter; *to which is added, An Oration pronounced by him, concerning the Method of ſtudying the Practice of Phyſick. Printed at* Leyden *by* Janſon's Vander Aa 1727.

AS a right line is the meaſure of itſelf, and of oblique lines too, ſo it is not poſſible for a phyſician to underſtand faulty *Secretions*, unleſs he be well acquainted with the nature of them, as when in health. This learned author has wrote fully and demonſtratively on this head, and deſerves the attention of the moſt ſkilful in the healing art; for were they not to proceed according to nature's laws, the body would always labour under diſ-

eaſes; and as ſome of them are deficient, and never can be remedied afterwards in valetudinarians, ſo we muſt conclude that the frame of ſuch perſons is naturally depraved, which is not in human power to recover. To proceed in giving rules how to ſupply this defect, and to divert ſuch a *Secretion* into another channel, is foreign to the preſent purpoſe; therefore take this gentleman's account as it ſtands in his book, recommended by his ſagacity and judgment, for which he is now advanced to a profeſſorſhip in the univerſity of *Harderwick* in *Holland*.

By *Secretion* he underſtands, that the blood parts with many humours into various glands, ſuch as bile into the gall-bladder, ſpittle into the mouth, urine into the kidneys, bladder, *&c.* He thinks ſuch as have undertaken to treat on *Secretions*, without giving a previous account of the blood, and of the ſtructure of the organs, have made this doctrine obſcure hitherto: he therefore tells us, that the Blood is a liquid like other fluids, in ſome reſpects, but in others very different; for example, *like other fluids*, two drops under contact unite, and put on a ſpherical figure, if nothing prevent them; whether this happens from attraction, or any other impulſe, he does not determine: however this *phænomenon* is true in melted metals alſo; hence, ſays he, we find that the globules of the blood are ſpherical. He obſerves, that it is eaſier to make an homogeneal, or well-mix'd fluid, to move, than to ſeparate them, as appears in oil ſwimming on the ſurface of water, which will move to any ſide with eaſe; but it is hard to ſeparate it from the water. This coheſive force may be augmented or diminiſhed in the ſame liquor, for heat diſſolves jellies; whereas cold makes them glutinous: the ſame we experience in iron heated, for then it yields ſoon to the touch, and when cool'd, it grows more tenacious; ſo blood turned into pus, grows thin, whereas in the cake it is tenacious; but he believes that ſome parts may be changed, and others left untouched, as we ſee in milk and blood curdled by acids; and would from hence infer, that mercury will ſalivate, and cantharides attack the organs of the urine without touching other parts: but here he extends his obſervations too far, becauſe experience informs us, that theſe very bodies mentioned will affect many other parts; and ſurely, if it ought to be believed that the one taken at the mouth will ſalivate, and the other ſwallowed down, will produce bloody urine, we may, by a ſtronger reaſon, conclude, the firſt parts touched will ſuffer in proportion; and it is ſo in fact, becauſe mercurials will vomit and purge, and cantharides alſo will bring on vomiting and purging of blood: however his poſition is true, tho' his examples are bad: He tells us, that large quantities of liquor will hinder concretions, as appears in cryſtalliſation; for ſalts diſſolved in water, appear as one homogeneous liquor; but by evaporating to a pellicle, they then unite into a body

a body of ſalts; hence too ſmall a quantity of liquor cauſes concretions: but it is to be remarked, that ſome bodies require leſs liquor than others; ſuch are, for example, fix'd and volatile ſalts, ſugars, *&c.* A plentiful vehicle only, is often capable of ſeparating a mixed fluid, as water ſeparates raiſins from the ſpirit of wine, in which they were diſſolved, by the repelling force between water and raiſins, or oily bodies. He obſerves, that a heavier body, mix'd with a lighter, does not always ſubſide to the bottom; ſo water diſſolves ſalts, and ſpirits, metals, *&c.* why then may not the blood, by its tenacity, ſuſpend heavy bodies; for the gravity decreaſing by being minutely divided into ſmall molecles, in a triplicate proportion, a very ſmall ſphere's gravity is more than counterbalanc'd by the reſiſtance of the fluid, and therefore is ſuſpended: when fluids and ſolids are intimately mixed, throw the fluid into any poſition, the heavier parts don't ſeparate from the fluid: thus ſalts diſſolved in water, or mercury in a fluid, moved any how, never diſunite by that motion; but the heavier liquids are rendered by ſolids diſſolved in them, if thrown up by any force, they run a greater length than the fluid alone can do; becauſe they contain more matter, and overcome the reſiſtance more eaſily. Here the author might have found a truer reaſon, and better grounds for mercury's ſalivating faculty, than by his ſuppoſing, as before, a change of ſome particles, and not of others: hence may we ſee how fluids, rendered heavier by ſolids being diſſolved in them, overcome reſiſtances with a weaker impulſe, or leſs velocity. He obſerves, that two liquors mixed, do often unite into a ſolid; ſo it happens with a volatile ſpirit, and rectified ſpirit of wine; as alſo with oil and vinegar of litharge; ſo it is with the ſerum of blood and the ſame alcohol, and there is no reaſon to think otherwiſe of ſome liquors and our blood. Suitable to what was ſaid above, mix'd liquors do either often unite into globules naturally, or by a coagulative power placed in one of the fluids, ſo that a greater or a leſs quantity unites in this manner; and this happens in the blood-veſſels, either from the coagulating power in one of the fluids, or from the preſſure of our cylindrical tubes, the circumrotation of the fluids, and their alliſion againſt the ſolids.

So far does the blood agree in properties common to all other fluids. But now our ingenious author proceeds to take a view of the properties of the fluids and ſolids, when they act with united forces. In this part he obſerves, that ſome fluids attract, others repel ſolids; for example, glaſs oil'd, repells water or ink; ducks feathers, and ſome other fowls, repel water; mercury attracts gold, and the fatty veſſels have no water in them; and therefore he thinks ſome *Secretions* eaſily accounted for by this bare conſideration: he thinks it eaſier for the blood to circulate on in its veſſels, than to be ſecreted from it, becauſe a parallel motion is eaſier than any other; and this article relates to

what was ſaid above, to wit, that oil would more eaſily move in a fluid, than be taken off from it. He affirms, that oils and oily parts, attract the ſolids more forcibly than waters, and thinks this a ſufficient proof for ſome ſeparations: he ſees no reaſon to reject the experiment upon very ſmall tubes, to wit, that as they being moiſtened, will attract a fluid up to a great degree above the ſurface of the fluid; ſo will our capillary veſſels attract their liquids, even without any impulſe from the heart, and make a *Secretion* without that aſſiſtance: this attractive force in the periphery of the glaſs tube, is called a *Zone of Attraction*, and the ſmaller is the diameter of the tube, the higher will the liquor aſcend into it. Hence he thinks, that the *Secretion* made by the *Vena Porta*'s ſmalleſt veſſels, has no need of any impulſe from the heart, ſince this property will anſwer all ends: but here I am afraid this learned gentleman has loſt view of another experiment, to wit, that if the ſum of the *Area's* of the tranſverſe ſections of the capillary veſſels exceed the *Area* of the tranſverſe ſection of the *Aorta*, that then the fluids will run ſlower in the capillary veſſels, than in the *Aorta*; and this is proved to be ſo by a fair computation. Now the impulſe from a preſſure of water, of ſome miles in length, anſwerable to the heart's percuſſive force, not altering the truth of this propoſition, it appears, that the velocity in this caſe will be but ſmall in compariſon to what it is in a ſingle tube: however, I cannot deny the truth of the propoſition in general. He again proves, that motion is more readily continued onwards, than a ſeparation can be made by the experiment of a ſmall tube, being inverted whilſt half full of liquor, the liquor moves downwards, but does not run out; he thinks that polypous concretions may happen in the larger veſſels, more readily than in the capillary tubes, becauſe friction hinders them, but reſt cauſes them; now the parts are more at reſt in the larger, than ſmaller; but this is a weak reaſon, for they are firſt more at reſt in the ſmalleſt tubes, and therefore ſtick to them more, as himſelf has own'd above; and he immediately ſubjoins a propoſition that deſtroys this aſſertion; for he ſays, that fluids move more ſwiftly in the axis of the channel, than at the ſides; how then can they be more at reſt there? He adds, moreover, that the thinneſt and fineſt parts move in the middle, and the moſt glutinous at the ſides, which retard their motion. He now comes to the propoſition, where the velocity of fluids is computed, namely, that if two cylinders be of unequal diameters, the fluids run faſter in the ſmaller, inverſely as the ſquares of their diameters, that is, the greater is the tube, the ſlower runs the liquor; the ſmaller it is, it runs the faſter.

He now goes on to take a view of theſe ſpecific properties of the blood itſelf, preſcinding from theſe it has in common with other fluids: and here he tells us, that the *Secretions* depend on the nature of the blood, which is different in

in every individual, and not to be imitated by art; that it conſiſts of parts of various magnitudes, viz. of red globules, and of watry particles; that the ſmalleſt veſſels don't readily admit of the former, they being too large to enter them, unleſs by ſome force; that the blood is globular, but in circulating it changes that figure ſometimes into a cylindrical, at other times into an oval figure; that if the blood ſtagnates, it congeales, as is evident when let out, or in dead animals; that the circulation alone preſerves its fluid ſtate; that in proportion as it circulates, its parts are finer or groſſer, and fitted thereby for *Secretions* of different kinds; that too ſlow, or too quick a circulation, do thicken it, for a ſlow circulation is equal to reſt, and too quick a motion exhales its fluid parts: that in like manner, and from the ſame reaſon, it thickens alſo by too intenſe cold or heat; that the globules are too large to enter into the minuteſt veſſels; hence are many membranous parts white from the ſerum, and not red from the globules; but I think it may here be obſerved, that we are to conclude the membranes, if they appear red upon diſſection, have been inflamed: then he lets us know, that the left ventricle of the heart blends this heterogeneous liquor intimately, and prepares it for its various *Secretions*, many of which return into the blood, as the ſpirits, bile, &c. Laſtly, he ſhews us how humours detained any where, do turn into different ſorts of *pus*, and other inemendable corruptions.

He, in the next place, proceeds to the conſideration of the ſolids. Here he obſerves, from *Pitcairne*, that the orifices of every veſſel are circular, from the lateral preſſure of the fluids, and that the veſſels themſelves are therefore cylindrical; that theſe orifices differ in magnitude for the reception of various fluids for *Secretions*; that the trunk's *Area* is leſs than that of all the ramifications taken together. And again, that therefore the blood circulates ſlower in the capillaries; that the ſolids compreſs the fluids by their contractile fibres and elaſtic force. And laſtly, that the arteries vary in their courſe, according as various *Secretions* are to be made, to wit, their angles, their magnitudes, their contorſions, &c. do greatly differ.

Our author having hitherto dealt in preliminaries, comes now to his ſecond part, that is, to the *Secretions* themſelves. He divides them into five heads, but ſays they all are ſeparated from the arteries, unleſs you ‡ will except the

‡ And here is a difficulty which deſerves conſideration; *Secretions* are every where performed by the arteries, they enter into the glands, and the veins reconvey the remainder into themſelves; ocular demonſtration convinces us, that if the *Vena Porta* be injected, the liquor paſſes from it into the *Vena Cava*, ſeated in the liver, which is a certain ſign of the inoſculation of theſe two veſſels; the upper and inferior branches of the cœliac artery enter the liver, the middle enters the gall-bladder; the ramifications of the cœliac are infinitely more large in *Area*, than the *Area* of the cœliac itſelf, when it parts from the *Aorta*, and may afford a *Secretion* of bile in a quantity ſufficient; therefore I ſee no reaſon why this *Secretion* ſhould be made here by a vein, when all others are made by arteries.

Secretion

Secretion of the *Bile* from the *Porta*; they are carried to the ſecretory veſſels by the compreſſive forces of the heart and of the veſſels, by the vermicular motion of the muſcles, and the power of the receiving veſſels; ſome ſeparate of their own accord; others, by growing coheſive, are fit for certain glands; others again are ſeparated by their adheſion to the veſſels; others, by a certain magnitude proportioned to the glands; others, by a certain quantity of liquid interſperſed between the globules; others, by a certain degree of velocity; others, from a certain courſe of the veſſels; the greater particles, the more tenacious; the leſſer, the more fluid may be ſecreted. Thus the fine ſpirits, the groſs bile, ſeed and fat, the thin urine, and the malignant humours are diſcharged from the blood. The cauſes then which alter the nature of our *Secretions*, are the changes of velocity, of coheſion, of the magnitude of the pores, of the quantity of liquor, or its gravity; when the *Secretion* is performed, the ſame accidents befal them, ſuch as to become thicker or thinner afterwards; ſuch as to grow more corroſive and putrid, ſo as to contract many other bad and deſtructive qualities.

From what has been hitherto alledged, we may evidently conceive, without having recourſe to any *Hypotheſis*, how readily *Secretions* are accountable for, by the bare conſideration of the nature of the fluids, and the ſtructure of the veſſels.

The author, in his *Inaugural Oration*, ſo called from his being then inſtalled profeſſor, preſſes phyſicians to lay aſide all *Hypotheſes*, and to follow nature; and he thinks the moſt ſure method to attain to this end is *Tabular Obſervation*, which he ſays is to be effected in the following manner, to wit; he would adviſe practitioners to read over the moſt ſelect authors treating of practice; he would have them make a copious index of the names, definitions, cauſes of the diagnoſtic and prognoſtic ſigns, and of the cures of diſeaſes; and from this index he would have the phyſician referr'd to his collection of precepts and rules, which he has taken the pains to gather from thoſe good books, in proper order. I hope this gentleman will, in due time, favour the world with ſuch a treatiſe, that every man of common ſenſe may furniſh himſelf with it, and be capable of knowing and diſtinguiſhing the true practitioner from an empiric; but by the examples he has given us of this method, it muſt be a ſort of a library of phyſic, and muſt turn out very voluminous: I conceive it poſſible to produce a much ſhorter work, and more exact than what our author has advanced, which may appear at a proper ſeaſon in your *Magazine*.

Whereas this judicious author has wrote another treatiſe on *Perſpiration*, which is alſo a ſpecies of *Secretion*; we intend, in proper time, to ſend you an abſtract of it.

ARTICLE

ARTICLE XXXVIII.

A compendious Syſtem of Natural Philoſophy, with Notes, containing the mathematical Demonſtrations, and ſome occaſional Remarks: Part II. *continued, Conſiſting of five Diſſertations.* 1. *Of the Barometer.* 2. *Of the Cauſe and Origin of the Winds.* 3. *Of the Aſcent of Vapours, and their Reſolution into Rain, Hail, Snow,* &c. 4. *Of the Cauſes of Thunder and Lightning; with a Solution of the Phænomena of the* Aurora Borealis. 5. *A new Theory of Fermentation. By* J. Rowning, *M. A. Fellow of* Magdalen-College *in* Cambridge. London, *Printed for the Author, and ſold by* S. Harding, *Bookſeller, on the Pavement in St.* Martin's-lane, 1736. *In* Octavo, *containing* 94 *Pages.*

THIS ingenious author wrote in 1734, the firſt part of this ſyſtem of philoſophy; and in the year 1735, a ſecond part, of which the abſtract, now under our conſideration, is a continuation. And altho' it may appear prepoſterous to make an extract of the laſt volume, before we have given a view of the firſt and ſecond; yet, as thoſe are diſtinct volumes, and our deſign is to give the public, ſome time or other, an abſtract of all of them, 'tis equal to the readers where they begin.

On the *Barometer*, commonly called the weather glaſs, in which is quickſilver, he obſerves, that its riſing or falling is owing to a greater or leſs *preſſure* of the air; not, as was fondly imagin'd heretofore, to a horror of a *vacuum*, which idle notion was firſt confuted in fact by *Galilæo*, and applied by *Torricelli* to the weather-glaſs, nor to *Linus*'s funicular *Hypotheſis*; and this is now the ſettled opinion of all this ſett of philoſophers: if it ſhould happen that the quickſilver ſhould be ſuſpended at 75 inches height, as *Huygens* obſerv'd, in a tube fill'd with mercury, well purg'd of air; that extraordinary caſe depends, not only on the *preſſure*, but alſo on the *attraction of coheſion* between the glaſs and the mercury, ſo cloſely preſs'd together, which occaſions an infinite number of contacts; but uſually the quickſilver riſes no higher, at any time, than 29 inches, ſeldom to 30, if the glaſs ſtands perpendicular; for if it ſtands in a diagonal form, then the quickſilver may riſe or fall 60, or as much more as you pleaſe.

The quickſilver falls upon the following cauſes, namely, before rain, and upon aſcents, or great winds; but 'tis high upon eaſterly and north-eaſterly winds, and in calm froſty weather; it falls in aſcending heights, ſo as to deſcend 1-10th of an inch in 31 yards, and one inch in aſcending 310 yards. The reaſons he aſſigns, are, that *before rain* the air grows lighter, and can't ſupport its vapours, therefore they drop down in rain: if winds blow from two contrary quarters, they accumulate more

more air into the ſame ſpace, the air being thus compreſſed, is heavier, and therefore preſſes the mercury upwards: in ſtorms the glaſs ſinks very low, becauſe the ſtream of air is carried faſter away than it is ſupplied; it ſtands high at eaſterly and north-eaſterly, becauſe on the weſtern, or *Atlantic* ocean, the winds are generally weſterly; now, as has been ſaid, two contrary winds accumulate more air. As it ſeldom freezes but when the wind is eaſterly or northerly, therefore then the weather-glaſs riſes; it riſes quickly after great ſtorms, becauſe the current of air runs in faſt; as in rivers, the waters run the faſter, as their declivity is greater; the variations are greater the more northerly we go, becauſe their contrary ſtorms are greater, and more frequent. Laſtly, it is obſerved, that there is but little variation of the riſe or fall of the quickſilver under the line, becauſe the winds are always the ſame, at leaſt, they only vary a little upon ſtorms, which happen not above once in two or three years, when the glaſs falls very low.

The learned author anſwers an objection to the aboveſaid arguments, brought from Monſieur *Leibnitz*; to wit, he ſays, that a body ſpecifically lighter than a fluid in which it is ſuſpended, adds more weight to that fluid, then when, by being reduced in its bulk, it becomes ſpecifically heavier, that is, vapours reduced into clouds deſcending, add leſs weight than before, and therefore the mercury falls. To which Mr. *Rowning* anſwers, 1*ſt*, That the cloud preſſes the air with a force equal to its whole weight, for it loſes its acceleration. 2*dly*, The glaſs foretells rain long before clouds fall. 3*dly*, That the fall of two inches of quickſilver in the tube, would more than equivalate the vapours of a whole year, at once condenſed into clouds, and which did even ceaſe to gravitate upon the air. Laſtly, rains fall between the tropics, in great quantities, which are obſerved to make no variation in the weight of the air: but this objection might have been eaſily anſwered, by ſaying, that vapours mix'd with air, make it lighter, and make the glaſs fall. Mr. *Patrick* accounts for this riſe and fall upon Dr. *Halley*'s principles; for he obſerves, that the riſe of the mercury preſages fair, and its fall, foul weather; its fall in hot weather, foretells thunder; in winter, its riſe foreſhews froſt; its fall, thaw; if it fall ſoon after foul weather, expect but little of it; and, *vice verſa*, expect but little fair weather, when it proves fair ſoon after it riſes; expect ſettled fair weather, where it riſes two or three days before the foul weather is over; ſo if it falls two or three days before the rain comes, expect a continuance of foul weather; the changeableneſs of its motion, ſhews changeable weather: Laſtly, if it ſtands at much rain, and then riſes, it preſages fair weather; and, on the contrary, if it ſtands at fair, and then falls to changeable, it foretells foul weather.

'Tis then, ſays our author, not ſo much the height of the mercury, but the motion, that indicates

dicates the weather: therefore the following rules ſhew us how to judge of the weather; to wit, if you obſerve the ſurface of the mercury to be convex, the mercury is riſing; if concave, tis ſinking; if 'tis plain, 'tis ſtationary; and laſtly, if the tube is ſmall, then ſhake the tube, if the air is heavier, 'twill riſe 1-10th of an inch higher; but if lighter, 'twill ſink as much: this ſhaking diſengages the ſticking of the mercury to the ſides of the tube.

He obſerves, that the uſefulneſs of this inſtrument has given occaſion to the invention of ſeveral kinds of *Barometers*, beſides the *Torricellian*; one by *Des Cartes*, another *horizontal* or *rectangular* one, of a *diagonal* one; of a *wheel-barometer*, by Dr. *Rook*; of a *pendent Barometer*; of a *marine Barometer*, by Dr. *Hook*; of one in the *Philoſophical Tranſactions*, N° 427. invented by himſelf, wherein the ſcale of variation may be encreaſed *ad infinitum*; and of another of his own invention, ſtill more nice; and laſtly, of a *portable one*. He gives us alſo a mathematical demonſtration, to ſhew that the variation may become infinite. Let, ſays he, the quickſilver be to that of air or water, as s to 1, and let the variations of this be to that of a common *Barometer* in the given ratio of n to 1. This effect will be obtained by making the diameter of the rod immers'd to the diameter of the larger tube, as $\frac{\sqrt{n+s}}{ns}$ to 1; that is, let the rod be leſs by the ratio of $\frac{\sqrt{n+s}}{ns}$ to 1, than the larger tube, and it will ſucceed; that is, if the bore of the rod be ſo ſmall as that 14 inches in length ſhall contain only a cubick inch of quickſilver; but this machine is ſo contrived, that as water falls into a baſon and ſinks it lower, the mercury riſes in proportion, as the air grows lighter. See his figures, and their deſcriptions. And in his latter invention, he ſays, that if the proportion between the rod and the tube be ſo much different, that the rod is only about the 1-20th part of an inch in bore; the variations, in this caſe, will be to that of the common *Barometer*, as 175 to 1.

On the *Winds*, he tells us of the many opinions of their cauſes, namely, they proceed from an air ruſhing out of the bowels of the earth, from a *Plenum* and rarefaction; but he embraces Dr. *Halley*'s ſentiments as neareſt the truth, and as accounting for all the winds we know of. The Doctor ſays, that where a tract of air is rarefied by the heat of the ſun, the leſs rarefied ruſhes in to make an *Equilibrium*: thus at the equinoctial line the ſun running weſtward (or the earth running eaſtward) in thoſe parts, over which the ſun is vertical, the air is greatly rarefied; and therefore, as the day advances, every moment the heavier air continually ruſhes in upon the parts where the air is more rarefied, and makes the wind continually eaſterly there. From the ſame foundation it happens on each ſide of the equinoctial, to about the 30th degree of latitude, the wind is north-eaſt

eaſt on the northern ſide, and ſouth-eaſt on the ſouthern ſide, becauſe both ſides ruſh in to make an *Equilibrium*: on the coaſt of *Guinea* the wind always ſets in upon the land, by reaſon of the ſtrong reflection of the ſun's heat from the ſand. In that part of the ſea called the *Rains*, between 4 and 10 degrees of latitude, and between the meridians of *Cape Verde* and the eaſtermoſt iſlands that bear that name, the winds hardly blow any way, becauſe the air is in *Equilibrio*, from the eaſterly and weſterly winds meeting calmly together, ſo as not to ſupport the vapours, but let them drop into continual rains. The *Monſoons* blow half a year one way, and half a year another; for when the ſun is in the tropic of *Cancer*, the wind blows ſouth-weſterly; but when in *Capricorn*, 'tis north-eaſterly, that is, they blow towards the parts that are moſt heated: theſe are what the ſailors call *Trade-winds*. In the *Atlantic* ocean, on this ſide of the 30th degree of latitude, there is generally a weſt or ſouth-weſt wind, to make up the *Equilibrium* deſtroy'd at ſhore. He obſerves, that this reaſon holds good in our land-breezes in the heat of the day, in calm weather, becauſe then the land being heated, the air ruſhes in from ſea; and here he confirms it by a warm water-plate over a tub of cold water, with a wax-candle juſt blown out; apply this candle to any ſide of the tub, the ſmoak ſtill moves towards the plate: from all this he concludes, that whatever part the wind blows to, there muſt be a deſtruction of the *Equilibrium* of the air ſomewhere in the quarter to which it blows.

On *Vapours*, *Rain*, *Snow*, and *Hail*, we are given to underſtand, that *Vapours* are rarefied air, lodg'd in a caſe of water; and that theſe mount till they arrive at a place in the atmoſphere of equal gravity with themſelves, and there they float; when theſe *Vapours* coaleſce, they form *Rain*, which being too heavy to float, drops down: if theſe *Vapours* freeze into iceicles, they form *Snow*; if drops of *Rain* be congealed into ice, theſe conſtitute *Hail*; and if *Vapours* don't riſe high from the ſurface of the earth, they conſtitute a fog, which however riſing higher, are clouds; ſo that fogs are clouds upon the earth, and clouds are but fogs on mountains. Our author has brought objections againſt Mr. *Newentijt*'s and Dr. *Deſagulieres*'s opinions of *Vapours*; but having left us no *Hypotheſis* of his own on them, we may as well embrace the common opinion, which is moſt probable, as none at all.

On *Thunder* and *Lightning*, and the *Aurora Borealis*. As to *Thunder* and *Lightning*, he ſays, they happen from a mixture of *effluvia*, partly *ſulphureous*, partly *nitrous*, floating in the air, fermenting, kindling, and flaſhing, which occaſion exploſions and ſtreams of fire: the effects of theſe are owing to the violent agitation of the air, and the force of exploſion unitedly, and not to *Thunder-bolts*, as the vulgar think. The diſtance the *Thunder* is from us, may be known by the interval of time, between ſeeing the *Lightning* and hearing the *Thunder*; for light moves

moves in a manner inſtantaneouſly, but ſound only moves 1000 feet in a ſecond: if then we ſee lightning and 8 ſeconds after we hear the clap, the thunder will be diſtant from us 8000 feet, and therefore we are under leſs danger. Our learned author takes the *Aurora Borealis*, or *Northern Lights*, to have the ſame origin with thunder and lightning; then he proceeds to their deſcription, particularly of that which appeared in *March* 6, 1715-16; and gives us Dr. *Halley*'s opinion of them, namely, that they are *magnetic effluvia* of the earth, which, like the *effluvia* of *electric bodies*, emit light in the dark; and *Monſieur de Mairan*'s, who thinks that they are owing to the *zodiacal light*, or *atmoſphere of the ſun*, ſpread in the form of a *pyramid*, and mixing with our atmoſphere, which is of an *heterogeneous* nature, which do produce all theſe appearances.

His laſt diſſertation is on *Fermentation*, for which he produces one reaſon only; namely, an *attraction*, of *cohesion* he means, *between the bodies*: for, if a ſolid and a fluid, or two fluids be blended together, and they attract each other more forcibly than they do themſelves, this *inteſtine* motion enſues, as even to raiſe a flame ſometimes, if the bodies are of the inflammable kind. Our author takes notice, that we need have no recourſe to Dr. *Freind*'s or *Keill*'s, or to Dr. *Boerhaave*'s conditions or circumſtances requiſite to raiſe this motion; for the fore-mention'd conſideration is ſufficient alone to account for the cauſe of all fermentations.

ARTICLE XXXIX.

Moſis Chorenenſis *Hiſtoriæ* Armeniacæ *Libri tres. Accedit ejuſdem Scriptoris Epitome Geographiæ. Præmittitur Præfatio, quæ de Literatura ac Verſione ſacra* Armeniaca *agit; et ſubjicitur Appendix, quæ continet Epiſtolas duas* Armeniacas, *primam* Corinthiorum *ad* Paulum *Apoſtolum, alteram* Pauli *Apoſtoli ad* Corinthios; *nunc primùm ex codice MS. integre divulgatas.* Armeniacè *ediderunt, Latine verterunt, notiſque illuſtrarunt* Gul. *et* Georg. Gulielmi Whiſtonis *filii,* Aulæ Clarenſis *in Academiâ* Cantabrigienſi *aliquandiu alumni.* Lond. *ex officinâ* Carol. Ackers, *apud* J. Whiſtonum, 1736. That is, *Three Books of* Moſes Choren *on the Hiſtory of* Armenia; *to which is added, An Abridgment of Geography of the ſame Writer, along with a Preface, treating on the Literature of the Tranſlation of the Holy Writ in* Armeniac; *to which are added, Two Epiſtles in the ſame Language, the one of the* Corinthians *to* Paul *the Apoſtle; the other from* Paul *the Apoſtle to the* Corinthians, *publiſh'd from a Manuſcript.* William *and* George, *Sons of* William Whiſton, *ſometime Scholars of* Clare-Hall *in the Univerſity of* Cambridge, *publiſh'd them in* Armeniac, *turned them into* Latin, *and illuſtrated them with Notes.* London: *Printed by* Charles Ackers; *and are to be ſold by* John Whiſton, *Bookſeller*; 1736.

AS languages are one of the moſt known methods by which ſciences are communicated to the world, theſe young authors have commendably applied themſelves to a tongue, of which we have never had any types before; and as hiſtory is very inſtructive for gentlemen, and many other profeſſions, they appear to me at one and the ſame time, to have introduced a new language, and a new hiſtory; of the authority of which, and the manner of uſhering it into the world, pleaſe to take their own accounts in a preface to the work.

How much ſoever they have wearied themſelves in the proſecution of their ſtudies, they are willing to take notice of three things; namely, of the *firſt* attempt of bringing the *Armenian* tongue into *England:* 2*dly*, Of their cauſe of this attempt: 3*dly*, Of the *Armenian* learning, and the work before us.

Some years ago their learned father received two epiſtles in *Armeniac*, the one of the *Corinthians* to *Paul* the apoſtle, and another of *Paul* the apoſtle to the *Corinthians*, in manuſcript; he ſent to an *Engliſh* merchant living at *Haleb*, or *Boræa*, a city in *Syria*, to get him an account of theſe letters, who did more than anſwer his expectations, becauſe he ſent him alſo an *Arabic* verſion of them; but being unacquainted with *Armenian*, he ſent them to Monſieur *La Croze*, the king's librarian at *Berlin*; and *J. J. Schroder*, profeſſor of the oriental languages

languages at *Marpurg*, none beſides thoſe two being ſkill'd in that tongue. Mean while they got *Schroder*'s grammar, and a little after *Villot*'s dictionary; which, being unfit for that purpoſe, they framed one of their own; and as there were no types of this tongue, by the help of friends they procured them, and then ſet about the work.

They obſerve, that this tongue is now, and has been called from the deſtruction of the tower of *Babel*, the *Häican* language, from one *Häic*: however they ſay, there were no monuments of it till after the 4th century from our Saviour, tho' doubtleſs the tongue was then in uſe. They produce out of *Joſephus*, the word *Nachidhevan*, a town near mount *Ararat*, which ſignifies αποβατηριον, or the deſcent from *Noah*'s ark, which ſhews this town was meant by him, and that they had then a language; and *Strabo*, *Pliny*, and *M. Terentius Varro*, make mention of the river *Tigris*, and ſay, it ſignifies an arrow. Now *Tir* in the *Perſian*, is an arrow; and *Teg* or *Tig* in the *Armenian*, ſignifies alſo an arrow; and ſo by bare etymology they would enforce, that the *Armenian* tongue was then in uſe. They proceed and ſay, that *Herodotus* and *Strabo* obſerve, that the *Scythians* and *Perſians* call an ax *Sagaris*. Now *Saer*, an *Armenian* word, ſignifies an ax. The *Greeks* received the word paradiſe from the *Perſians*, which is a garden. Now the *Armenians* call a garden *Partez*, but paradiſe *Dracht*; the juſt are called by the *Magi*, *Artades*; by the *Perſians*, *Mard-dod*; and by the *Armenians*, *Ardar*; that the *Perſians* call an eagle, *Arxiphos*; and the *Armenians Ardzovi*, or *Ardzio*. Now if ſimilitude of words have any force to prove the exiſtence of a language, the *Armenian* claims that title.

They ſay indeed, that the ſcriptures mention nothing of this language. They only tell us, that before *Noah*'s flood all ſpoke the ſame tongue, which was *Hebrew*; but that after the building of the tower of *Babel*, then begun a confuſion of tongues, among which they ſay was the *Häican*, or *Armenian*. They make this laſt agree in ſix points with the *Hebrew*; namely, in prefixes, terminations, declenſions, ſerviles, compariſons, and in ſimple and compound verbs: but then there was no *Armenian* letters, till the 4th century of Chriſt; and that *Miſrobus* was the firſt inventor of them, being divinely inſpired. The ſacred books were written in *Armenian* in the year 410; which verſion, if you believe Mr. *La Croze*, is *the queen of all verſions*, taken from the *Syriac* and the *Greek* of the *Septuagint*. This *Armenian* is near a-kin to the *Greek* in cuſtoms, and the tranſlation is made from the *Hexaplar*‡ edition of *Origen*; but adds, that this edition is not exact. Thus men ſay and unſay! *Firſt*, it is the queen of verſions; then the book from whence it was taken

‡ So called from its being printed in ſix columns.

was

was not quite true nor falſe! *Uſcan*, an *Armenian* biſhop, unſkill'd in the *Greek*, is ſuſpected, becauſe he adapts it to the vulgate, which *La Croze* diſpraiſes, as not agreeing with the *Berlin Armenian Codex*, which was *Haiton*'s, king of *Armenia* the leſſer, in the year of Chriſt 13, which wants the book of *Wiſdom* and *Eſdras*; as for the *Apocrypha*, they were lately inſerted in the *Häican* interpretation.----- This author only reckons twenty-two books of ſcripture from *Miſrole*: and here they bring ſome examples from many points of ſcripture; and ſay, the learned therefore are very deſirous of better editions; at this rate we ſhall ever be mending; and at laſt ſhall make all religion doubtful. *Pyrrhoniſts* are dangerous in religious points.

They proceed, and ſay, that their author was not well vers'd in letters, and therefore is not to be truſted; and beſides, he ſpeaks of many unknown authors. He mentions the *Epheſin* council in 531; but ſays nothing of the council of *Chalcedon* in 551, therefore they ſuppoſe he died before; whereas, by the regiſter of the kings, he appears to have wrote after it. This hiſtory was written in the year 500: many books are written in this language; there are many manuſcripts in it, particularly by *Nerſis Claianſis* 1200 years after Chriſt. However, altho' this book is not very authentic, we learn the *Armenian* language by it. *Thomas Vandanenſis* publiſhed it; but *La Croze* ſays 'tis faulty, as he proves by the *Leipſick* library.

They have given us a map of this country, drawn from *Pappus Alexandrinus*, and *Uſcan*; as alſo a genuine verſion, and the form of *Armeniac*, with a regiſter of their kings: they have added an appendix, conſiſting of two epiſtles; but they don't vouch whether they are genuine.

Having ſhewed you the *Portico*, let us now lead you into the apartments. In the firſt book our author, before he begins his hiſtory, dedicates his work to *Iſaac* of *Bayratz*, whom he praiſes for his zeal and chriſtian prudence; and tells us, that this book took its riſe from his commands. Then, in the *firſt chapter*, he ſays, he collects it from the *Grecian* authors, who are called by him *Mothers* and *Nurſes* of wiſe men. In the *ſecond* and the ſequel we are told, that their princes averſion for learning, is the reaſon that there are no traces left of their exploits, and conſequently the *Armenians* then muſt have been a ſtupid race of people. We are told, that authors differ about *Adam* and other princes of families. *Adam* had *Seth* at the 230th year of his age; *Seth* had *Enos* at 205; and this *Enos* is ſaid to be the firſt who *called God*, Gen. iv. 26. Here our author is pleaſed to make a diſtinction, telling us, that to call, has a double meaning; to call a thing, or to name a thing, as if it had been forgotten; or to call any one to your aſſiſtance: and our author takes it in the latter ſenſe, that *Enos* called upon God to his aſſiſtance.

In the next place, he gives us the genealogy from *Adam* down to

to *Noah*; as alſo that from *Sem*, *Cham*, and *Japhet*, which, as it differs from the ſcripture account, will not paſs with the world as true hiſtory, tho' our author calls it authentic. He makes *Belus* to be *Nebroth*, or *Saturn* of the poets; *Cham* to be *Vulcan*, or *Prometheus*; and *Cuſh* to be *Sol*. For proof of the truth of this preceding part, he tells us, he had theſe accounts from *Arſaces*, king of the *Parthians*, who (king *Antiochus* being killed) governed the whole world, and gave to his brother *Valarſaces*, king of *Armenia*, *Niſibin* a city for his habitation; to which he added this caution, too well followed by arbitrary princes; that whatever other things your inclination and valour can conquer, take; for all belong to the ſtrong they can take, their arms are their boundaries; and as he wanted to know the exploits of the *Armenians*, he ordered *Syrus* to write them. *Valarſaces*'s letter to his brother *Arſaces* on this affair, was repoſited in the *Armenian* archives; of which, if the readers are inclined to be further informed, they may conſult the 8th chapter of our author. Then he proceeds to give his readers an account of *Häic*'s rebellion againſt *Belus*, and of *Belus*'s death by the hands of *Häic*, who, after the battle, built a town, and called it *Häicria*. This *Häic* left a ſon called *Armenius*, who begat *Chorus* and *Manazarus*; and *Armæis*, who left *Saræus*, and the province of *Sarcia*, was named from him. *Saræus*'s ſtomach was ſo remarkably great, that it became proverbial: *If you have* Saræus's *ſtomach, ſaid the people, our province has no granaries.* From one of his progeny, called *Harma*, *Armeniac* had its name. The *Armenians* made war on *Trichanes* the *Mede*; they fought and conquered the *Aſſyrians*, and the giant *Barſamus*, who had ravaged their country, and reduced *Cæſarea*, and made all that country ſpeak *Armenian*; but he obſerves, that all theſe relations were taken from private accounts, given by *Maribas Catenenſis*; for *Ninus*, being a proud prince, ordered all public tranſactions to be burnt, and that none ſhould be mentioned by any writer, ſave himſelf. From *Aram*, we had *Araeus*, who was a beautiful prince, and who was greatly longed after by the infamous *Semiramis*, who is ſo famed in hiſtory for her brutal paſſion. She ſent this *Araeus* many preſents, to entice him to conſent to her embraces; but he refuſing her requeſt, ſhe made war upon him, and gave orders to her generals not to hurt *Araeus*: however, he was killed in the battle, and ſhe gave orders to ſearch for his body, which being accordingly found, ſhe kept in one of her apartments, till it was corrupted, and became noiſome, and then ſhe ordered it to be thrown into a deep pit; and to prevent the *Armenians* from offering to revenge his death, ſhe ſpread a report, that ſhe had order'd her gods to lick his wounds, and bring him to life again, and order'd a ſtatue to be erected for him, to ſignify that he had ſatisfied her deſires. At the place where the battle was fought, ſhe built

built a large town, and ſaid, *She would live there in ſummer, and at* Niniveh *in winter.* She was ſo cruel, that ſhe deſtroyed all her ſons, except *Ninyas*, for their voluptuous way of living, the very fault ſhe was guilty of herſelf; and for which fault her huſband left her, and fled to *Crete*; and ſhe deſervedly was killed by her ſon *Ninyas* in *Armenia*, after her flight from *Zoroaſtes*, who rebelled againſt her, altho' ſhe had given him all the power into his hands: but *Maribas Catinenſis* ſays, that ſhe fled, and threw all her riches into the ſea; *Monilia Semiramidis in Mari.* This *Ninyas*, called *Zama*, took the government upon him; and our author ſays, he was cotemporary with *Abraham*; and that *Jgram* was cotemporary with *Sardanapalus.* We are told, that the firſt king of *Armenia* was *Paræmus*, who, by *Varbaces*'s promiſes, was prompted to wage war with *Sardanapalus*, and took his kingdom from him. He, in the next place, gives us the order of ſucceſſion, from *Varbaces* to *Tigranes*, to whom he gives the following character: He was a man of power and wit, in alliance with *Cyrus*; he took off the *Armenian* yoke, brought peace and plenty, and filled the *Armenians* with butter and honey; he was beautiful, tall, ſtrong, temperate, prudent and eloquent; he married *Tigrania*, king *Aſtyages*'s ſiſter, but it was not for the regard he had for *Tigranes*, that made him part with his ſiſter to him: the true reaſon was, he did not approve of the ſtrict alliance between *Cyrus* and *Tigranes*, for he called a council, and broke his doubts to them; and added, that threats would have no effect to deſtroy this league, and therefore he was reſolved to try if he could break it off by a ſtratagem, which was agreed to by his counſellors; which was, that he would marry *Tigrania* to *Tigranes*, and order her to poiſon him. The deceit took ſo far as to marry the lady, but ſhe honeſtly revealed the ſecret to her ſpouſe; and upon this, *Tigranes* deſired a meeting with his brother *Aſtyages*; they met, but *Aſtyages* kill'd *Tigranes*, and ſo ended, a war which they had waged for five months. I think the authority for *Tigranes*'s progeny and actions, are only borrowed from old ballads, and ſo we leave the matter. He ſays further, that the wars of *Troy* were in *Teutamus*'s time, king of the *Aſſyrians.*

In his ſecond book, he begins this hiſtory from *Alexander* down to *Tiridates*; he tells us, that the *Armenians* were called *Arſacidæ*, from king *Arſaces*; and that their kingdom deſcended by ſucceſſion from father to the eldeſt ſon. This *Alexander* was ſon of *Philip* and *Olympias*, who was the 24th deſcendant from *Achilles*; after *Alexander* came *Seleucus*, called *Nicanor* from his conqueſts. This *Seleucus* lived only three years, and he left his dominions to *Antiochus*: he was ſucceeded by his ſon *Antiochus*, ſurnamed *Theus.* The *Parthians* revolted from the yoke of the *Macedons*, after reigning ten years; and thus *Arſaces* came to reign, who was of the

ſeed of *Abraham*; and thus was confirmed the ſaying in *Geneſis*, *Kings of nations ſhall proceed from thee.* This *Arſaces* reigned over the *Parthians* ſixty years, after the death of *Alexander*; he lived at a city called *Balchen*; he reduced all the eaſt, and drove the *Macedonians* from *Babylon*, and entered into a friendſhip with the *Romans*, and waged war with *Demetrius* and *Antiochus*, and ſo conquered one third of the world, that is, all *Aſia*. *Valarſaces* his ſon was made king of *Armenia*; he took the Jew *Sambæus Bagaratus* into his favour, and honoured him with the hereditary right of crowning the kings, and beſtowed upon him a government towards the weſt, where he had rule and command over thouſands. This *Valarſaces* firſt brought diſcipline among the *Armenians*, and then marched againſt the *Macedonians*, and drove *Morphilochus*'s army to flight, ſlew this enemy with a javelin, conquered his country from him, and brought peace and plenty to them. Our author beſtows high *Encomia* upon the wiſdom and improvements of *Valarſaces*; he inſtituted various offices in his kingdom, and made ſuch wiſe diſpoſitions in it, that he governed it with eaſe to himſelf, and pleaſure to his ſubjects, as every wiſe governor or king ſhould do.

[*This to be continued.*]

ARTICLE XL.

Friderici Hoffmanni Conſiliarii Regis intimi, & Archiatri opuſcula Medico-practica, ſeu Diſſertationes ſelectiores antea diverſis Temporibus editæ, nunc reviſæ & auctiores. Decas prima & ſecunda, &c. Halæ, 1736. Or, *The practical Works or choice Diſſertations of* Frederic Hoffman, *Privy-Counſellor, and chief Phyſician to the King, publiſh'd heretofore at different Times, and now reviſed and enlarged. In two Decads. Printed at* Hall (Saxony) 1736.

THIS learned profeſſor has acquired ſo conſummate a knowledge in his profeſſion, and is deſervedly ſo well eſteemed by all, who have any ſkill in the art of phyſic, that there needs no other preamble to the abridging of it, than his own preface; in which he aſſures the world, that his deſign in communicating theſe diſſertations, was to ſettle true notions in the pathology, prognoſtics, and the cure of diſeaſes. He obſerves, that the phyſiology is brought almoſt to its *acme*; but as for the cauſes of diſeaſes, and ſome other uſeful parts of the profeſſion, too little had as yet appeared to make the art be deemed perfect. Many have been the authors who have wrote on theſe ſubjects; but they have omitted more than they have mentioned; he fears many, who have handled the affair, have had too little experience on their ſide; but, as

for his part, he has followed the practice for half a century, and claims a right to be believed. He obſerves, that the *Hiſtory of the Diſeaſe* is the true baſis of all practice; from it they gather the genius and nature of the diſeaſe, the origin and cauſes, whether remote or immediate; the temperaments, ſtrengths, cuſtoms, event, and all that can be wiſhed for. Were this ſtrictly obſerved, the diſſenſions, ſo frequent among the gentlemen of the faculty, would ceaſe of courſe; they would not burthen their patients with ſuch *farrago's* of drugs, nor would they need to have recourſe to ſuch ſtrange ſpecifics, as is now too uſual. His deſign then, in this treatiſe, is to give ſuch cautions and precepts, as will advance the curative art to its utmoſt pitch of certainty, in ſuch particulars as his obſervation has informed him were defective.

His firſt diſſertation turns upon the *Efficacy of Nature and Art in healing Maladies*. Here our author obſerves, that there are two phyſicians; to wit, *Nature* and *Art:* by *Nature* he means the ſtrengths of the patients; if they fail, the whole ſtructure fails; if *Nature* be ſtrong, great effects are produced thereby; and very often phyſicians boaſt of their ſkill, when *Nature* perhaps did the work. *Art* therefore is only a ſervant of *Nature*, and muſt follow her directions, and do her office: if *Nature* is ſluggiſh, *Art* ſpurs her on to her duty, and *vice verſâ*. He explains the word *Nature* by mechanical operations, and reſolves it into motion, preſſure, &c. But he obſerves alſo, what effects the ſoul has upon human bodies, and how idea's can produce certain diſeaſes; ſuch as ſmall-pox, fevers, &c. and he calls all theſe actions *animal actions*. He does however obſerve, that mankind enjoys a pre-eminency above brutes, inaſmuch as he can preſcind, compare, and cement ideas, which brutes cannot; and all this is done by the ſoul, which is an inhabitant of the body, and a ray of the Divinity. Our author proceeds to tell us, that by *Nature* he means the motions and operations performed in human bodies by the influence of the fluids and ſolids, which mutually act and re-act upon each other. All which mechaniſm is the work of an Almighty hand, wiſely ranging and diſpoſing every thing for a proper end: ſo that ſo long as the ſoul works upon the body, and the body upon the ſoul, ſo long is life continued. He obſerves, that machines, made by men, have limited operations; but that thoſe made by our Creator are not ſo; they neither act, nor are they acted upon in ſo narrow a manner: however, as external bodies produce ſtrange alterations in the Almighty's works, it is abſolutely neceſſary that phyſicians ſhould ſtrive not to be ignorant in any kind of knowledge that can contribute towards the preſervation of our machine. So that by the word *Nature*, nothing farther is underſtood than a complex, an aggregate, a co-ordination of certain ſubſtances, acting and re-acting upon each other in a mechanical

nical or a geometrical manner. And our author ſubjoins this reaſon for his opinion, becauſe all our actions, ſays he, ſecretions, periods of diſeaſes, returns, criſes, and whatever elſe occur in us, are mechanically accountable for, without having recourſe to any ſuppoſititious faculties. 'Tis nature alone, ſays *Cœlius Aurelianus*, that does good or harm; 'tis not the ſoul that directs the motions, or the ſecretions; that makes the blood acrimonious, ſaline, viſcid or bilious; that produces obſtructions, convulſions, fevers, *&c.* it is barely the nature of the fibres, of the humours, *&c.* that introduces all our changes. There is no need, ſays he, to have recourſe to any entity within us, that directs our operations, 'tis barely the mechaniſm itſelf that guides all: however, in paſſions of the mind, the ſoul acts upon the body; and in the reception of ſenſible impreſſions, the nerves convey them to the common ſenſory, and idea's are raiſed in the ſoul: ſo that we are not quite machines only. In fact, the circulation is the fountain of all our actions; when that exceeds or fails, we then begin to be diſtempered; when it proceeds in a regular manner, health is preſerved. Thus, *v. g.* an inflammation of any noble part, a ſyncope, polypous concretions, and whatever diſtempers ſeize us, do all proceed from ſome diſorder in the circulation; and the remedies, which reſtore that motion, teſtify this truth: ſo that it may juſtly be concluded, that the circulation is the origin of health; and that if the blood ſtagnates, it grows ſharp, putreſies, and corrodes the parts. This motion preſerves the blood's texture; ſecretions being impeded, are a means of diſeaſes; but moſt generally the blood's motion, failing in ſome particular, is the cauſe of theſe irregularities. *Hic eſt ille medicus*, ſays our author, *qui languores corporis ſanat*; that is, *This is the phyſician who cures our diſtempers.* Enquiring into the cauſe of this motion, he finds, that the *ſyſtole* principally, and the *diaſtole* of the muſcles, are the ſole occaſion of this circulation, which are cauſed by the influx of the animal ſpirits into them. By the mutual, continued contraction and dilatation of the muſcles, the blood is driven forward, and this mechanico-geometrically ſets all our engine to work; for, by theſe alternate motions, the blood is thrown into the brain, the ſpirits are preſſed into it; and if they fail, the heart ſtops; if they exceed, the heart beats too vehemently. Thus by a harmony all goes forward in proper order, in which the ſoul has no ſhare, except in perceiving and conceiving. By taking a view of our conſtitutions, we may ſay a perſon is robuſt, when the fibres are elaſtic and ſtrong; or weak, when the fibres are lax; or of a ſenſible temperament, when the fibres are readily moved upon any ſlight occaſion; or ſtupid, when inſenſible upon the ſtrongeſt impreſſions; and ſo of the reſt. In like manner may it be underſtood, why age, diet, or air, change our conſtitutions; or why cuſtom has ſo great an ef-

fect upon us: for, if the fibres recede from their natural tone, the perſons muſt ſuffer in proportion; as then this circulation preſerves health, ſo does it alſo cure loſt health. This being what is called nature, ſhe cures diſeaſes; for if the blood, ſtagnating and producing putrefaction thereby, begins to move forward again regularly, this diſeaſe is cured; a greater circulation is a ſpecies of a ſpaſm; for all the fibres contract themſelves vigorouſly, and throw off the offending matter, even ſometimes by effuſions of blood, which are critical; at the noſe in young men; by the *anus* in old people; and by the *uterus* in women. Fevers themſelves, he ſays, are an univerſal ſpaſm, and a remedy; for no ſooner do people catch cold, than they begin to tremble; the blood recedes from the external parts to the internal; a commotion is raiſed all over us, and the encreaſed circulation breaks open the obſtructed parts, and throws off the offending matter; nor are diarrhœa's, vomitings, and other evacuations of excrementitious humours, any other than motions of the fibres, raiſed by irritation or preſſion of vitiated fluids upon them; which, being encouraged duly, create health; but, if they are ſuppreſſed, they retreat to ſome noble part, in the ſhapes of aſthma's and other diſeaſes, and deſtroy the patients. Thus are the nobility often ruined by the multitude of remedies, whilſt the vulgar are cured by nature alone. Nature indeed requires order and time to perform her operations in; and therefore fevers end in fourteen or fifteen days, inflammations in ſeven, and ſo on; for time is but a ſucceſſion of motions, in which the humours are prepared and fitted for expulſion. Time alone does not effect this affair; but there is a certain conformation of the parts adapted for the reception of certain humours; the ſmaller ſecretory ducts receive the thinner parts, and the larger the groſſer; *v. g.* the ſerum is expelled by the kidneys, the bile by the inteſtines, the thinneſt by the pores, and ſo on. Officious phyſicians, ſays our author, do more harm than good; they often exalt motions that ſhould be depreſſed, or ſuppreſs a defective motion when they ought to exalt it: they expel humours not yet fitted for expulſion, and commit many errors, which nature itſelf would have amended. Our author having given a full view of the efficacy of nature in the cure of diſeaſes, he in the next place proceeds to ſhew us, where nature cannot prevail; and here he tells us, that ſhe does nothing in luxations, fractures, bad conformations of the parts; in great obſtructions, or damages done to the parts; in cataracts; in *hernia's*; in the ſtone; in ſcirrhus's, cancers, nor in the retained ſecondines: neither can it cure chronical diſeaſes, nor ſcurvies, nor conſumptions, nor leproſies, nor gouts, nor hypochondriaciſm, nor epilepſies, nor convulſive colics, nor poiſons, nor venemous bites of animals, nor palſies, nor *gutta ſerena*, nor dropſies, nor an obſtruction of the *menſes*, nor gonorrhœa's, nor worms,

worms, nor the ſtone, nor madneſs, nor apoplexies, nor tertians; ſo that however beneficial nature is in the cure of diſeaſes, yet there is an abſolute neceſſity for employing expert phyſicians to help nature to do her duty, that is, to exalt the defective circulation and depreſs the too exalted ſtates of blood: nature indeed does more good in acute diſeaſes; not but that ſhe often fails of her duty there too. He gives us the encomia of *Emetics* in the ſmall-pox, in intemperatures, in viſcidities of the bowels, in arthitic caſes at the beginning of a fit, in inflammations of the jaws, in the aphthæ of malignant fevers, and in ſtubborn intermittents; he commends *Sudorifics* in the plague and malignant fevers, and in dyſenteries; but he fits them to the temperament. Regimen, he ſays, has great efficacy in diſeaſes; *v. g.* he commends a moderate warmth in inflammatory caſes, a thin diet and an abſtinence from wine: ſo that he concludes that art muſt aſſiſt nature; that phyſicians well ſkill'd in their profeſſion can both foreſee and prevent diſeaſes, as well as cure them when people are ſeiz'd: he adviſes, however, that great prudence ſhould be made uſe of in the choice of them, ſuch in particular only ought to be called for, as have made nature their ſtudy; ſuch as are ſkill'd in all the branches of their calling; and concludes this Diſſertation with this expreſſion, *Cardo univerſæ ſcientiæ medicæ unicè in eo verſatur, ut naturam hominum in ſtatu ſano & æquato perſpectam habeamus, & quomodo arte, ac motus & medicamentorum præſcriptione, nec non ipſa manuali operatione eam adjuvare debeamus*; i. e. the whole buſineſs of phyſic centers in the knowledge of the nature of men in a ſound and diſeaſed ſtate, and in the art of preſcribing properly for them, and even to proceed to manual operation, if needful.

In his ſecond diſſertation he treats of the right and moſt ſimple method of nature in curing diſeaſes. Here he tells us, that the Creator had diſpoſed the world in ſuch order, and made every thing with ſuch exact proportion, that there was no cauſe which had not its ends: ſo phyſicians ought to imitate the author of nature in their cure of diſeaſes; that they ought to ſearch out the cauſes of them; they ought to admit of no *hypotheſis*, no fictions, nor any falſe principles, but as far as art was capable, to bring their ſentiments from facts and experience, if they deſigned to avoid reproach, and to act for the good of their patients: ſo our author had accuſtomed himſelf to bid adieu to all feign'd principles and to ſtick cloſe to nature, by obſerving ſuch changes as he found made by her in the blood and ſolids: and as he found that this method conſiſted in preſerving the circulation, and expelling the excrementitious juices, as well as reſtoring the craſis of them, ſince death muſt otherwiſe enſue, he judged his views ought to be to have regard to what was taken in and ſeparated from the blood; for if more is thrown in, than is ſeparated, the remainder muſt be vitious and create innumerable diſeaſes, and ought therefore to be expelled;

led; hence, says he, the progressive and excretory motions must direct our intentions, if we intend to preserve patients from fevers, stagnations, inflammations, and other fatal diseases, often called malignant; we must augment these motions if we intend to take off the effects; and as this is done by a spastick motion, he would have that augmented. In order to explain himself, he observes, that this spasm is either universal or particular; 'tis, says he, universal, when the whole system of the vessels is so much concern'd as to irritate the whole mass of blood; but particular, when one part is concerned only, so as to contract the parts and to hinder the circulation; and this particular contraction affects mostly the membranes, and occasions convulsions and hysterical cases: this particular contraction, says he, causes hæmorrhages, pains, epilepsies, and the like; he then proceeds to examine which of these motions are salutary, and which of them fatal; he finds those which depend on a fever, or on a febrile motion, tend to health, because they remove obstructions, take off stagnations, and expel noxious humours; but he judges those motions which constringe the emunctories, and so detain matter within us, to be fatal; because they heap up matter in the vessels, where they putrefy and vellicate; wherefore, says he, our main intention must be to augment that particular spasm into an universal one, if we intend to succeed. He gives several examples to illustrate the precepts here set down, namely, if, spring or fall, the blood vessels are filled with too much humours, they create particular spasms in the belly and back, and are at length cured by the menses in women: who, says he, would offer to stop this flux, nay, who would not encourage it? However, if in the small-pox, purple fever, scorbutic cases, and the like, such hæmorrhages should happen, he thinks the particular stricture is to be relaxed by opiates and diaphoretics, but not by astringents. It is proper to observe in this place, that Mr. *Hoffman* has too evidently stuck close to an hypothesis, which is neither favoured by reason or experience, neither is it followed, nor can it with safety be embraced by any prudent physician; we will wave any further remarks and proceed. He again repeats, that a fever is useful for taking off all these particular spasms, so that in inflammatory cases the fever relaxes the stricture on the seventh day, and sets the patients free, as is commonly observed in the poorer sort. Here again our author is grosly mistaken; for what prudent physician, that he, or all others ever heard of, embraces this monstrous error? This, says he, is nature's law, that we restore a free circulation by bleeding; this practice is certainly good, but I conceive his reason to be false; he advises practitioners to avoid to draw off too much blood, left they bring on a mortification, and to apply fomentations of such materials as will gently dissipate the collected humours. He takes it to be a rule observed by nature in eruptive fevers, that the blood

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runs to the interior parts and expels thereby the puſtules; and therefore thinks that tempering remedies, ſuch as dates, figs and other ſmooth things, that gentle bezoardics, and not volatile remedies, are proper; much leſs are purgatives, or emetics of a harſher ſort, proper; nor yet opiates, or expoſing the patients to an open air: he puts a queſtion, whether bleeding, vomits, or purges, are convenient in the ſmall-pox? and anſwers in the affirmative conditionally, to wit, if the blood boils too much, bleeding is proper; if the *primæ viæ* are loaded, then gentle emetics and laxative purges may be adminiſtered: he explains how coughs are remedied and concocted by his *ſtrictive ſyſtem*, to wit, the humours run thither plentifully and open the paſſage, and the ſerum glides off concocted: as nature cures coughs in this manner, he rejects any revulſion by emetics, cathartics, *&c.* Intermittents, he ſays, are cured by aperient ſalts, bitters and aromatics; but diſapproves of emetics and cathartics, or the bark in the beginning: he pretends, that he follows nature's ſteps in this manner, and ſo prevents obſtructions thereby: there are many other ſalutary motions and ſecretions, which, nature being ſtimulated, throws out of the body, ſuch are leproſies, ſcald heads, *&c.*

Hitherto our author has treated of ſalutary motions, but in the ſequel he makes mention of ſymptomatical ones, or of ſuch as are detrimental; as that is, ſays he, a good remedy which takes away the cauſe, ſo is that a bad one which excites vehement commotions: thus a mortification, an impoſthume, or the like, raiſe fevers, by which the patients are deſtroy'd; in like manner poiſon, the ſtone, worms, ruptures, and ſuch like, produce ſymptoms, that deſtroy; ſuch motions, ſays our author, muſt be quell'd and checked; nay, he commends the *Peruvian* bark to check an intermitting fever very early, if the patients ſtrengths fail; he ranges epilepſies, violent coughs, hiccups, palpitations, violent pains, whether from ſtones or worms, and eroſions of the brain, under ſymptomatical motions. To this head are alſo referr'd inflammations of the ſtomach, violent dry coughs, dyſenteries, and ſeveral other diſeaſes that endanger life. He thinks it by this time evident, that ſalutary motions ought to be encouraged, and that ſymptomatical ones ſhould be check'd.

So much of acute diſorders. He now takes under conſideration chronical caſes, which are ſlow, and which cannot be cured, as fevers are often, by nature alone; here we muſt have recourſe to remedies to take off obſtructions in the veſſels, by making the humours more fluid, firſt by gentler and then ſtronger aperients; for it is not ſafe to uſe the moſt violent aperients at firſt.

From what has hitherto been ſaid, our author thinks it plain, that phyſicians have nothing more to do, than to *open obſtructions* diſcretely, and reſtore the free circulation of the blood; and this is his *ſummary of practice*; all the ſecret our profeſſor knows of in his art

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is to follow nature in the manner ſpoken of; he produces *Hippocrates*, and other authors, that adviſe a ſtrict obſervation of nature, whether ſhe tends towards concoction or crudity. He ſubjoins one general rule to be ſtrictly follow'd, to wit, that a *phyſician ſhould never move humours, that are already put in motion by nature*; v. g. he would not give emetics, ſudorifics, or purgatives, till the *impetus*, or violence of the fits abates: and tells us out of *Ovid*, *Dum furor in curſu eſt, currenti cede furori, &c.*

In the next place, he adviſes phyſicians to make choice of convenient emunctories for the expulſion of the humours; *v. g.* Bile ſhould be diſcharged through the inteſtines, *&c.* and that if nature makes uſe of ſuch a proper paſſage to expel the noxious humours, phyſicians muſt encourage the diſcharge, and by no means check or ſuppreſs it, becauſe fatal ſymptoms would ariſe from ſuch imprudent and ignorant procedure.

I fear moſt of the gentlemen of the faculty will hardly give their aſſent to our profeſſor's *hypotheſis*, for ſo it muſt be called; if there be but one cauſe of diſeaſes, there can be but one remedy required; and that being once diſcovered, any empiric may then practiſe phyſic with ſucceſs: I cannot think that any perſon, endued with common ſenſe will ever be brought to believe that all diſeaſes, nay even contrary ones, do proceed from one cauſe alone; and if it were worth while to diſpute the matter, it could be very readily confuted.

ARTICLE

ARTICLE XLI.

We have received the following Letter, with the enclosed, from an unknown Correspondent; for which Favour we return our grateful Acknowledgments, and shall ever communicate to the Public such useful Pieces as come so generously offered for the Advancement of Literature.

GENTLEMEN,

" As your *Magazine* is well calculated for the encouragement of " all the branches of polite learning, I presume it is equal to you, " whether you publish abstracts of your own manufacture, or of " other mens. Now, as I have for some time been employ'd in " the private education of some youths committed to my care, the " extracts I made for their instruction in some parts of learning, " may not, I hope, be a less agreeable entertainment for the public " use, than they were for my private purpose: therefore I have sent " you for the first piece an extract of a celebrated book, entitled, *The* " *Art of Thinking*, composed by the Messieurs of the *Porte Roiale*, " and *now republished this present year* 1736, *at Amsterdam, with some* " *few additions*; which is the best of its kind extant, and which has " been of singular use to my pupils. Let not the brevity give you " or the world a meaner opinion of it; for I do imagine the authors " made it of no larger a bulk for their *Eleve's*, than it now appears " in; perhaps I have added some observations which will render ar- " gumentation more readily applicable: such as it is, I devote it to " your and the public's service.

Logica, sive Ars Cogitandi; in quâ, præter vulgares regulas, plurima nova habentur circa mentis operationes, & methodum cogitationes suas ordine optimo dirigendi. Editio novissima plurimis in locis emendata, ad optimum exemplar Gallicum revisa; in quâ addita sunt sex capita nullis in editionibus Latinis reperiunda. Amstelædami, apud J. WETSENIUM & G. SMITH, 1736. That is, *Logic, or the Art of Thinking; in which, besides the common Rules, many new Things are inserted, touching the Operations of the Mind, and the Method of digesting our Thoughts in proper Order. A new Edition, amended in many Places from the* French *Copy: To which are added, six Chapters found in no* Latin *Edition. Printed at* Amsterdam, *by* J. WETSTEN *and* G. SMITH, 1736.

TO be able to distinguish truth from falshood, is to have a judgment well framed; we ought therefore to form rules for this end. To what purpose were the study of sciences, if this were not the scope of them? Neither would these sciences be of any great va-

lue, if they did not terminate in juſtice and truth, and ſerve to guide our actions.

This is a neceſſary point; for to be liable to errors, to be blind to truths, to think wrong, to be always in extremes, to deny our aſſent to known truths, to ſhut our ears, to prate upon what we know nothing of, not to be able to diſtinguiſh between truth and falſhood, are ſigns of ſtupidity, or ſomething worſe.

Every opinion, how abſurd ſoever, finds its patrons; judicial aſtrology, taking remedies under certain conſtellations, that ſuch as are born under *Libra*, will be juſt, *&c.* have all prevail'd.

Theſe falſe reaſonings have obtained in private life, and have produced their miſchiefs to many of the race of mankind in their turn.

Some of theſe errors proceed from want of common ſenſe, as is ſeen among the fooliſh vulgar; but many more proceed from an inattention, or from too great a precipitation, or an indifference in examining into the truth, or from a ſhame of appearing ignorant.

On the other hand, many doubt of the certainty of every, or any thing; they are *Sceptics* and *Pyrrhoniſts*; they diſcover falſehood in truth, and truth in falſehood; and this we may call a malignant inattention.

Reaſon diſcovers true, from dubious and falſe things; and that there is a ſun, a moon, and earth; and that the whole is bigger than a part.

They, who make a merit of doubting of every thing, do naturally dwindle into doubts in religion, and appeaſe their bad conſciences by calling God's juſtice in queſtion.

We ſee then what *inattention* draws after it: we thereby give our aſſent to obſcure and uncertain things, and deny it to clear and evident truths; now the only cure of this inattention, is ſeriouſly to examine all things by reaſon, and to bring them down to that ſtandard.

It is uſeful, and poſſible too to come at certain rules, which may guide us in the ſearch of truth. This Logicians pretend to have diſcovered; but ſuch as have hitherto wrote, have not reached our deſires or wiſhes. However, the following ſheets will give us better lights, than have hitherto appeared.

Other Logic's have laboured to prevent diſputants from drawing *falſe conſequences*; but they had done better to have inſtructed youths how to *judge well*, which is the chief point levelled at in this ſketch: and theſe rules are chiefly drawn from *Des Cartes*, and Mr. *Paſchal*.

Moſt uſeleſs things are omitted, and nothing is inſerted, but what is uſeful; here are indeed converſions, figures, and ſuch hard trifles mention'd; becauſe the mind muſt be employ'd in difficulties, whether they be *difficiles nugæ*, or mathematics: but to value trifles only, is mere pendantry, and altho' they may deſerve mention, yet 'twere folly to inſiſt too much on them: for to profit the readers is the ſole deſign of theſe papers.

This

This treatiſe is call'd, *The Art of Thinking*; or, *The Art of Reaſoning well*; becauſe it contains the different operations of the *intellect*, ſc. *Idea*'s (or thoughts) *judgment*, and *diſcourſe*; the performance the authors leave to proper judges.

This *Logic*, containing examples from *rhetoric*, *ethics*, *phyſics*, *metaphyſics*, and *geometry*, is not ſo barren as others are; for their examples being taken from animals, &c. are quite uſeleſs: thus it happens, the Logic of the ſchools is ſcarce remember'd ſix months after the ſtudents have left them, becauſe their examples are ſo childiſh; whereas this teaches the rules, and gives uſeful and memorable examples: for, ſurely, dry rules require pleaſant and choice examples.

As for *rhetoric*, the invention of arguments, phraſes, and other ornaments avail little to make an orator; for theſe are learned by uſe; we are to avoid affectation of ſtyle, high-flown *hyperbole's*, and figures brought in by head and ſhoulders. For ethics, metaphyſics, and phyſics, you have them in their proper places.

It is to be obſerved, that this *Logic* agrees with all profeſſions, ſave with divinity; but even divines themſelves may uſe it, for divine authority is the beſt of reaſon.

Perhaps the examples from geometry, may not be readily underſtood; however, they are clear: for inſtance, in this ſcience it is affirm'd, that the ſquare of the hypotenuſe is equal to the ſquare of the two ſides of a rectangled triangle, and is marked thus, $a^2 = b^2 + c^2$, which can be eaſily demonſtrated.

Here it is deny'd, that riſibility is a property of man, unleſs it included thought; for dogs are obſerved to laugh.

Our authors make a diſtinction between conception and imagination; for a *chiliogon* may be diſtinctly conceiv'd, but not imagin'd; all its angles are equal to 1996.

As to *Ariſtotle*, they ſay, his errors are many, and his examples are ſo trifling, as not to be retained, which ought to be remark'd: for altho' he abounded in wit and judgment, yet we ought to forgoe his errors: his *phyſics* are imperfect, ſuppoſe they were true; for, who doubts, that all things are compounded of matter and form? whether matter, to gain a new form, has not firſt a *privation* of the former? if all things don't depend on form, if matter acts not? that place and motion are qualities and faculties? But how do we profit by this knowledge? Why muſt we *jurare in verba magiſtri*, or take an oath to follow his ſentiments?

Authors then do only deſerve regard for their reputation, or their truth; if for their *reputation*, we muſt be cautious, for 'tis arrogance to impugn a received opinion; if opinions indeed are divided, we may freely approve, or condemn, as reaſon guides us: if for their *truth*, falſhood then can deſerve no credit.

Ariſtotle has undergone the former fate; for he is praiſed by ſome, and blamed by others; for

who ſays now, as he did, that the nerves ariſe from the heart? In fact, they ſpring from the brain. Who now ſays, as he did, that the celerity of heavy bodies deſcending, is augmented in the ſame *ratio* with their gravity? All violent things are of ſhort duration. *Ariſtotle* has ſuffered this fate, his opinions have been bandied to and fro; ſome have been unreaſonably rejected, others unreaſonably received: reaſon prevails in ſciences, but authority in divine matters. Theſe papers are written only with an intent to come at truth, without favouring any ſect; if therefore *Ariſtole* is contradicted, it muſt be inferred, that in ſuch a point only we differ from him, but not in all.

Logic is the art of uſing reaſon, for acquiring itſelf, and other ſciences; namely, by *Apprehenſion*, *Judgment*, *Diſcourſe*, and *Method* or *Diſpoſition*.

Apprehenſion is an *idea*, or a ſimple contemplation of things in our mind, without pronouncing any thing of them; *v. g.* the earth, the ſun, cogitation, round, ſquare, *&c.* which *idea*, picture, conception, imagination, *&c.* may be compound or ſimple, abſtracted and preſcinded; may be univerſal, ſingular, or particular; may be complex, clear and diſtinct, or obſcure and confuſed, *&c.*

Judgment is that operation, or action of the mind, by which we couple various *idea's*, and affirm, or deny, this to be that; *v. g.* the earth to be round, or that the *idea* of roundneſs is identical with the *idea* of the earth.

Diſcourſe, or *Ratiocination*, is when out of one judgment we infer another; as, virtue is referr'd to God; but the heathens did not refer their actions to God; therefore the virtue of the heathens was falſe virtue.

Method, or *Diſpoſition*, is a ranging our *idea's*, judgments, reaſonings, or diſcourſes, into a natural order; therefore 'tis called *Method*.

Nature itſelf teaches us theſe things; but art improves nature: for we by this art are ſure we uſe our reaſon rightly; then we learn by it to detect errors; moreover, we gain a clear *idea* of the knowledge of our minds; and laſtly, we learn by it to explain our thoughts to others, by ſigns, or words and *idea's*.

There is no ſcience to be acquired without the intervention of *idea's*, which are inbred; wherefore here the authors take into conſideration the following things, namely, *1ſt*, The nature and origin of *idea's*; *2dly*, Their primary differences; *3dly*, Their ſimplicity and compoſition, their abſtraction or preciſion; *4thly*, Their extenſion or reſtriction; that is, their univerſality, ſingularity, and particularity; *5thly*, Their clearneſs and obſcurity, or diſtinction and confuſion.

As to the nature and origin of idea's; the word *idea* is ſo clear, that it wants no explanation: it is however a miſtake, to confine it to that mode which we call imagination; where pictures are repreſented to the mind; ſince the fall of man, images and corporeal *idea's* are moſt common indeed; but yet *conceptions* are alſo granted: for

for we *conceive* without *imagination*, and underſtand without pictures; *v. g.* for we both *imagine* three lines of a triangle as preſent, and *conceive* it as conſiſting of three right lines; but a *chiliogon* can only be conceived, as conſiſting of one thouſand ſides, but not imagined as preſent.

The continual uſe of imagination in apprehending corporeal things, is the cauſe of confuſion; as in the *chiliogon*, whoſe angles, equal to 1996, may be conceived, but not imagined. *Many things are conceived, which cannot be imagined*; *ex. g.* 'tis not poſſible to imagine thought, or an affirmation (*it is*) or a negation (*it is not*) where we ſay the earth *is* round; we can imagine earth and roundneſs, but the affirmation (*is*) is an action of the mind or intellect, and this can only be conceived. So that by the word *idea*, we don't only underſtand images, pictures, or ſenſible things, but alſo affirmations and negations, or actions and conceptions of the mind.

Words expreſs our *idea's* diſtinctly or confuſedly, but the ſound alone are not our *idea's*. Hence to ſay we have no *idea* of God, is falſe; becauſe, if by ſaying God, we have no other conception than G, O, D, or the letters without any ſubſequent *idea*, or A, d, o, n, a, i, or E, l, o, a, h, or *Lewis* G, O, D; if, I ſay, theſe letters were all intended to be connected without any idea, deification of the *Numina* could be no crime; and if the ſound were all, the eternity, omnipotency, or omniſcience, could be no attributes of the Godhead. Hence the *Occamiſts* or *Nominaliſts* are miſtaken in ſuppoſing a connexion of names by τὸ *eſt* to be reaſoning; we don't perceive, that the ſounds of red, green, *&c.* give to thoſe born blind any *idea's*; if the word *is*, were only a connexion of names, and if that were diſcourſe, all men could not agree on clear *idea's*. In this caſe, the *French* and *Arabians*, their words being different, would differ in ſentiments on things.

Words are arbitrary: there are *ſigns at pleaſure (ſigna ad placitum) cuſtomary ſigns (ſigna ex conſuetudine)* as a buſh ſignifies a tavern, and *natural ſigns (ſigna naturalia)* as ſmoke denotes fire, and theſe are equivocal; but *idea's* are not ſo; *v. g.* let a cylindrical axle move round, it moves not the lower wheel; but let it be ſquare, and then it will move it: now poſitive effects are not derived from imaginary cauſes; ſo that ſounds and idea's are not identical. So far for the nature, now to the origin of *idea's*.

'Tis affirmed that the maxim, *Nihil eſt in intellectu, quod non prius fuit in ſenſibus* (that is, *that nothing is in the underſtanding which was not firſt in the ſenſes)* is true; but this is ſaying, that all our *idea's* are corporeal, and it excludes all conception: now we conceive thought, we conceive entity in this expreſſion, *I think, therefore I am*; by which of our ſenſes do the idea's, of *to be*, and *to think*, enter? A painter paints for hire; but his picture does not ariſe from that reward, but from his brain. 'Tis a folly

a folly to ſuppoſe we imagine any thing, but what is corporeal, therefore not God by imagination; for to have no other idea of God, than as of an old man, is to have no conception of him; ſo to have no other idea of the Holy Ghoſt, than as of a dove, is to belye our judgment: for the idea's of them are ſpiritual, ſince judgment is falſe, if it be contrary to our conceptions.

All our idea's then ariſe not from our ſenſes; they may be accidentally in them, as raiſing a motion in the ſpirits, or where they are corporeal.

It may be ſaid, that we never conceive, but we imagine at the ſame time, at leaſt by the ſound; but the ſound in the imagination, is not the image of the thought; for the ſoul is accuſtomed to conceive a thought upon hearing a ſound: but there is a wide difference between that ſound and the thought ſucceeding. Deaf people have idea's, but they perceive no ſounds.

As to the Objects of Idea's. Whatever we conceive, is either conceived as a *thing* or ſubſtance, or ſomewhat ſubſiſting by itſelf; or as a *mode*, an attribute or quality incapable of ſubſiſting by itſelf, and determining a body to be in ſuch a manner; or laſtly, as a *thing modified*. Our idea of the firſt is a *body*, of the ſecond is *roundneſs*, and of the laſt is a *round body*.

Some *ſubſtantives* are *abſolute*, as the earth, the ſun, *&c.* and ſignify *things*; ſome attributes are denoted by *ſubſtantives*, as hardneſs, hoarineſs; others by *adjectives*, as hard, hoary; ſuch as denote *things modified*, denote primarily and directly the ſubſtances; and the modes indirectly, tho' diſtinctly, are called *connotatives*, as round, hard, *&c.*

Our mind conceives generally *modified things*; the *things* as the ſubject, and the *modes* as attributes, *ex. gr.* an infinite being; *being* is the ſubject, *infinity* is the attribute; ſo man is the *concretum* or *ſubject* of humanity, or *habens humanitatem*; humanity is the *abſtractum*, or *id quod habetur*, or the *attribute*.

'Tis neceſſary to avoid confuſion, to know what is the *mode*; we may however conceive a *mode* without its ſubject, as we conceive prudence, without thinking on the man who is prudent.

I may deny extenſion, figure, mobility or diviſibility, *i. e.* corporeal ſubſtance, to belong to volition, thought, doubting, reminiſcence, diſcourſe, and *vice verſâ*, which proves thought to be no mode of corporeal or extended ſubſtance.

Some modes are *intrinſecal*, which *inhærent ſubſtantiæ*, are in the ſubſtance, as round, ſquare; others *extrinſecal*, which *non inhærent ſubſtantiæ*, or are not in the ſubſtance, as loved, ſeen, deſired. Theſe laſt are called in ſchools *denominationes extrinſecæ*, or extrinſecal denominations. Some again are called *ſecundæ intentiones*, or ſecond intentions, as to be the ſubject or predicate, when we affirm one thing to be another.

Some modes are ſubſtantives, as cloathing, *&c.* ſome are real, as modifications, *&c.* laſtly, ſome

are

are negative, as ſubſtances with a negation of a ſubſtantive mode, as an unfaithful man.

Falſe idea's are called *entia rationis*, chimæra's, or things imagined to be joined, which are not ſo, making compariſons between idea and idea, and uniting them together, as golden mountains, *&c.*

In the next place, the authors proceed to *Ariſtotle*'s ten *categories* or *predicaments*; the firſt is *ſubſtance*, the reſt are *accidents*, or modes or affections.

Subſtance is ſpiritual or corporeal; this ſubſtance is made of matter and form joined together. A non-entity has no properties, accidents, modes or affections; if then there be properties, there muſt be ſome entity for thoſe modes to inhere in: *accidents* then may be ſeparated from their *ſubſtance:* ſubſtance is an obſcure, unknown ſubject; that is, *extended ſubſtance*, whoſe ſole property is to conſiſt of other things unknown; nor have we any *idea* of the ſubſtances of which any body conſiſts: if then we are ignorant of its compoſition, we are ignorant of body, we only know its properties, *i. e.* extenſion, impenetrability, mobility, figure, *&c.* — It is not the object of our ſenſes; if then *ſubſtance* be changed or deſtroyed, the *accidents* may remain under a new ſubſtance without our knowledge.

Quantity is either diſcreet, or divided into parts, as numbers; or *continued*, and is either *ſucceſſive*, as time, duration, motion; or *permanent*, as extenſion divided into lines, ſurfaces and ſolids.

Quality has four ſpecies; 1*ſt*, *Habit*; as ſciences, virtue, vices, writing, painting, dancing, *&c.* 2*dly*, *Natural faculties*; as will, memory, our ſenſes, power of motion, *&c.* 3*dly*, *Senſible qualities*; as hardneſs, ſoftneſs, gravity, heat, cold, colours, ſounds, ſmells, taſtes, *&c.* 4*thly*, *Figure* or *form*, which determines quantity to be in ſuch a ſhape; as round, ſquare, *&c.*

Relation or reſpect, or compariſon of one thing to or with another, as of a father to a ſon, of a maſter to a ſervant, likeneſs, equality, magnitude. There is a trifling queſtion in the ſchools, *Whether relation be really diſtinguiſhed from its foundation?* i. e. whether fraternity be diſtinguiſhed from the father? But the anſwer is, they are only diſtinguiſhed by the action of the underſtanding; for one white wall is not like another, till my intellect compares them.

5*thly*, *Action*, as to walk, to dance; 6*thly*, *Paſſion*, to be ſtruck or heated; 7*thly*, *Ubi*, or *where*; as to be in bed, in your ſtudy-place; 8*thly*, *Quando*, or *when*; as when lived ſuch an emperor? 9*thly*, *Situs*, or *ſituation*; as to ſtand, ſit, *&c.* 10*thly*, *Modus habendi*, or *the manner of being*; as to be cloathed or naked, *&c.*

Theſe are the mighty trifles of *Ariſtotle*, which are not founded in reaſon; behold a better diviſion of all we know, *ſc.*

Ment,

Mens, menſura, quies, motus, poſitura, figura,
Sunt cum materiâ, cunctarum exordia rerum.

That is, matter, meaſure, reſt, motion, poſition, figure, and our mind, are the beginning of all things in nature.

Metaphyſical words, either of the *Lulliſts*, as goodneſs, patience, &c. or of *Ariſtotle*, are ridiculous in accounting for things. *Ariſtotle's*, or rather *Porphyrius's Tree*, is a ſcheme of the *categories*.

As to the compoſition and ſimplicity of idea's and abſtraction or preciſion; when we conſider compound things, we conſider them apart, and this is called *abſtraction* or *preciſion*; as when we think of parts really diſtinguiſhed (called *partes integrantes*) as body, number, &c. *v. g.* we can think of one part without thinking of the other; of one muſcle or nerve, of length alone, of breadth or depth alone; and thus we learn ſciences by parts.

Now *abſtraction* is the conſideration of one attribute, omitting the reſt; *v. g.* we conſider an equilateral triangle, omitting all other ſpecies of them.

It is to be obſerved, that in *abſtractions*, the inferior contains the ſuperior degree; *v. g. I think*, contains the thing thinking; and this is what is meant by *abſtraction*.

As to the univerſality, ſingularity, and particularity of idea's, it is ſaid, altho' whatever is, is ſingular; yet, by *abſtraction*, we make them otherwiſe.

Singular idea's are called individual, as *Socrates*; *univerſal* or *generical* are more extended, as a city, a man.

Some *generical terms* are *univocal*, when the name is common to many, as a man, a city; others are *equivocal*, when the ſame ſound ſignifies different things, as the word *canon* ſignifies a rule or a gun; ſome are *analogous*, or applicable to many ſubjects, as healthy, which is adapted to air, victuals, men, &c.

In this place *univocal terms* are only underſtood. Now in univocal terms, we are to conſider two things; to wit, comprehenſion and extenſion.

Comprehenſion includes all the attributes of any ſubject, none excepted; but *extenſion* may be reſtrained; *v. g.* comprehenſion includes, in a triangle, extenſion, figure, three lines, three angles, their equality with two right angles; but extenſion may be reſtrained, and yet ſubſiſt; for it extends to all triangles, or every ſpecies of them; but may be reſtrained two ways, *viz.* by *addition* of another determinate *idea*, *v. g.* any triangle, and ſo it becomes particular. In ſhort, *comprehenſion* denotes all the attributes that there are in an idea; but *extenſion* only denotes the ſubjects that contain this idea; for example, extenſion denotes any ſubject, *v. g.* a triangle; but comprehenſion denotes every property of a triangle.

In the next place, they proceed to the five *Univerſalia* or *Pre-*

Prædicabilia; they repreſent us objects, as if they were *things*. The firſt is,

Genus.

When an *idea* is ſo univerſal or common, as to extend to others leſs univerſal; for example, the word *animal* extends to men, beaſts, birds, fiſhes, and to all living creatures; a quadrilateral figure extends to all ſquares, whether *trapezia*, parallelograms, &c. ſubſtance extends to corporeal and ſpiritual. It is ſaid in ſchools, that *Genus prædicatur de pluribus ſpecie differentibus*, or that Genus is predicated of many things different in ſpecies; ſo animal can be affirmed of men, or any other living creature.

Entity is the *ſupremum* or *ſummum Genus*, or the higheſt Genus; *animal* is ſaid to be below *entity*, and therefore is called *medium Genus*, or middle Genus; *body* being below animal, is called *remotum* or *infimum Genus*, or the remote or loweſt Genus; *proximum Genus*, or the neareſt Genus, is the middle Genus.

Species.

It is ſaid, *prædicari de pluribus numero differentibus*, or *prædicari de individuis*; that is, it is predicated or affirmed of many things, differing individually or numerically: ſo *man* is affirmed of *Socrates*, *Peter*, and all men.

It is alſo a common idea, which is under a more general; ſo a parallelogram or trapezium are Species of a quadrilateral figure; ſo *body* and ſpirit are Species of ſubſtance; ſo birds, men, beaſts, are Species of animals.

And the ſame idea may be called either Genus or Species, as it is referred; *v. g.* body is a *Genus* in reſpect of animate and inanimate bodies; but it is a Species with reſpect to ſubſtance; ſo a quadrilateral figure is a *Genus* with reſpect to a parallelogram, but it is a ſpecies to figure undetermined.

A *Species infima*, or loweſt Species, contains only individuals under it; *v. g.* a circle contains only individuals under it, they being all of one ſpecies; as *man* contains under it all individuals.

There is a *ſupreme Genus*, which cannot be a *Species*; whether this be an entity or ſubſtance, 'tis no matter.

Theſe *Genus's* and *Species* repreſent objects to us, as if they were *things*, tho' they may not be ſo; for figure is a mode, yet it is a *Genus* with reſpect to curves or right lines.

On the other hand, *idea's* of things modified with adjectives or connotatives, cannot be *Genus's* or *Species*, but may be differences, properties, or accidents; *v. g.* they may be *differences*, when the attribute is eſſential; as *rational*: *properties*, when the attribute is ſecondarily eſſential; as *diviſible*, *immortal*: or *accidents*, when *poſſunt adeſſe vel abeſſe, ſalvâ eſſentiâ rei*; that is, when they may be preſent or abſent, the eſſence of the thing being entire; as *hard*, *round*, &c.

Laſtly, a Species conſiſts of a Genus and Difference, *v. g.* a *rational animal*; animal is the Genus, and rational is the Difference.

Differentia, or *Difference.*

The firſt eſſential attribute of a Species, is the Difference; *v. g.*

body and ſpirit are two Species of ſubſtance; in body the firſt eſſential attribute is extenſion; but in ſpirit, the firſt eſſential attribute is thought.

It is to be obſerved, that *Genus* has two *Species* under it; each of which includes ſomewhat that is not in the idea of *Genus*, and *Genus* is predicated of both *Species*.

Hence *Difference* is referred two ways; either to the *Genus*, which it divides; or to the *Species*, which it conſtitutes; and is the primary eſſential attribute of the *Species*. Hence every *Species* has one name, as *mind*; or two names, which is a *definition*, conſiſting of Genus and Difference; as *rational animal*, *extended ſubſtance*, *thinking ſubſtance*.

Moreover, *Difference* has the ſame extenſion as *Species*; for it conſtitutes a *Species*, and diſtinguiſhes it from all others: therefore *Difference* and *Species* ought to be reciprocally predicated (affirmed) of each other; as *whatever thinks, is a ſpirit*; and back again, *every ſpirit thinks*.

When no attribute offers, that agrees to a Species alone, then our cuſtom is to connect ſeveral attributes together. Thus the *Platoniſts* thought proper to define devils, thinking them immortal men, *rational immortal animals*, and men *rational mortal animals*.

It is not neceſſary, that both *Differences*, dividing a *Genus*, be poſitive; 'tis enough if one of them be ſo; *v. g.* animal and brute differ in this; that animal includes thought in its *idea*, or at leaſt does not exclude it; whereas *brute* excludes thought from its comprehenſion.

Proprium, or *Property*.

It is an attribute next to the primary or eſſential attribute, and which depends on the primary or principal, and agrees to any Species alone, and to every individual of this Species; it is called a Property of that Species, and in this ſenſe *Property* is one of the *Univerſalia*; *v. g.* the rectitude of an angle is an eſſential difference of a right-angled triangle. Now it follows neceſſarily from this rectitude, that the ſquare of the hypotenuſe is equal to the ſquares of the other ſides; and this is a property of a right-angled triangle.

There are four ſorts of Properties; namely,

The firſt agrees *omni, ſoli, & ſemper* (to all, to that alone, and always;) and it is called *Proprium quarto modo*, or a logical Property; *v. g.* every circle has all its *radii* from the center equal; *vis inertiæ* is ſuch a property of matter, becauſe it agrees to all matter, to matter alone, and agrees always with matter.

The ſecond agrees *omni, non ſoli*; or to every one, but not only to that; *v. g.* extended bodies are diviſible: but time or duration, numbers and forces, are alſo diviſible.

The third agrees *ſoli, non omni*, to that alone, but not to all; *v. g.* man alone is a phyſician, but every man is not ſo.

The fourth agrees *omni & ſoli, ſed non ſemper*; that is, to every one, to that alone, but not always; man alone has underſtanding, eve-

ry man has it, but not always: ſo hoarineſs.---

Accidens, or *Accident*.

It does not belong to ſubſtance eſſentially; it is defined, *Id quod poteſt adeſſe vel abeſſe, ſalvâ eſſentiâ rei*; i. e. that which may or may not be in the ſubſtance; *v. g.* prudence, whiteneſs, or any other accident. I conceive a clear idea of this mode, without thinking of the man who is ſo: ſo if I conſider two ſubſtances, I may conceive one as the ſubſtance, and the other as an accident; *v. g.* man, cloaths. Here I conceive man as a ſubſtance, and cloaths as an accident.

There is a queſtion in ſchools, *An detur univerſale a parte rei? i. e.* if univerſals can be in nature? *v. g. city* is an univerſal name, including all cities whatever. Now the queſtion is, whether the word *city* can be ſaid to be in nature, or to be every city; 'tis anſwered, that an *univerſal is one common to many* (*univerſale eſt unum commune multis.*) Now this can never be, but by the art of my underſtanding, or by virtue of my conception; therefore not in nature (*a parte rei*;) for every thing in nature is individual, not univerſal.

Theſe things being diſcuſſed, our authors deſcend to *complex terms, to their univerſality and particularity*; we join terms to terms to make up a total idea; as a prudent man, a pellucid body, *Alexander* the ſon of *Philip*.

Pronouns make up this idea; as a pellucid body, or a body which is pellucid; and theſe two are equivalent expreſſions.

There are two ſorts of complex terms; 1*ſt*, *Explicative*, and this does not alter or change the total idea; as man, or an animal endowed with reaſon, is one and the ſame thing; *Lewis* king of *France*, or *Lewis*, means one and the ſame thing; 2*dly*, *Determinative*, when the extenſion of the firſt term is curtail'd or mutilated; *v. g.* a rational animal cuts off part of the term animal, and confines it to man; ſo the pope now ſitting, curtails the univerſal term *pope*, and *now ſitting* renders it individual.

Again, complex terms are threefold; 1*ſt*, Complex in words, as is ſaid above; 2*dly*, Complex in ſenſe, as *the king* who now reigns, that is, *Lewis* the 15th; 3*dly*, Complex in words and ſenſe, as prince of the philoſophers, who may be *Ariſtotle*, or any other.

It has been already obſerved, that adjectives or connotatives ſignify the ſubject confuſedly, tho' diſtinctly; but the mode or form diſtinctly, tho' indirectly. Thus *white* ſignifies ſomething general and confuſed, which may be body, or any other thing.

Hence, altho' *white* is determined to ſomewhat, yet that ſomewhat retains an equivocal univerſality, which is called an *univerſality of error*, and ought to be fixed to ſome individual. So the *true religion*, tho' it ſignifies one religion only; yet from a *Turk* or a *Jew*, it is an equivocal expreſſion; 'tis the intellect only, and not our ſenſes, that judge of this equivocation of error. Should it be ſaid, that a prince had ordered no ſoldiers to be enliſted, but

but ſuch as were ſix feet high; in this there would be no equivocation; but if it were order'd, that none but ſtout men ſhould be enliſted, here might be an error: This equivocation is often found in compariſons; *v. g. the moſt learned man*; here a doubt, or *quære* might ariſe; for tho' one only can be the moſt learned, yet an error may ariſe: thus in ſaying, *this is the ſenſe of ſuch an author*, which may be falſe; for tho' the author's meaning is fix'd, yet we may miſtake his meaning. Now the equivocation conſiſts in this, that we miſs the ſubject, which is confus'd, and is in the dark; becauſe the diſtinct meaning is miſtaken. In like manner, any ſectary may ſay, *this is the ſenſe of the ſcripture*, yet he may be miſtaken.

In the next place, the authors ſpeak *of the clearneſs and diſtinction of idea's, and of their confuſion and obſcurity*. A diſtinct and lively idea, ſay they, is clear; but a confuſed one is obſcure: pain, *v. g.* gives us at one and the ſame time a diſtinct and an obſcure idea; for we feel it diſtinctly; but whilſt we think it is in the place, 'tis in the mind.

Examples will make this evident; *v. g.* we have a clear idea, that we judge, diſcourſe, will, deſire and feel; we judge clearly of extended ſubſtance; of figure, motion, reſt, duration, order, number, and of God, in one ſenſe; for as to happineſs, what it is, we are in the dark.

Perfect idea's include all that is in an object; now an idea may be clear, yet not perfect; we have confuſed idea's of all ſenſible qualities; as of colours, ſmells, taſtes, ſounds, feeling, cold, heat, gravity; and of our appetites, as of hunger, thirſt, pain, *&c.*

Impreſſions made upon us, by heat, pain, *&c.* are in the mind only; for nothing like theſe is in the bodies; pain, *v. g.* is cauſed by a communication to the brain, and to the ſoul; hence, the ſoul, ſeparated from the body, may feel the pains of hell.

How bodies deſcend by gravity; how electricity or magnetiſm attract amber or iron; how hard and heavy bodies have more matter, and light has leſs; how gold and air ſhould poſſeſs the ſame ſpace, yet one be heavier than the other, are obſcure idea's.

As nothing material can think; therefore the ſoul is neither atoms, nor fire, nor air.

The remedy of confuſion, is to examine things maturely; we are neither more or leſs happy for knowledge; we ought to make a true judgment of virtue and vice; we have an idea of beatitude and miſery; we fly the one, and deſire the other; but we miſtake them often, in fixing happineſs in ſuch things as cannot make us ſo. We incline to concupiſcence, and fix an idea of good in riches, power, excellence, precedence, and ambition, from that cauſe; hence we look on all the reſt of the world as ſtatues or puppets put into motion by our power; the fortitude of ſome makes them glory over the cowardice of others; generoſity is a regard for mankind; magnificence ariſes from pride, becauſe they imagine the world

world adores them. Religion alone perſuades us to ſolitude; men are no greater in palaces than cottages; pleaſure and gain blind the world.

Another cauſe of confuſion of thought and reaſon is, becauſe idea's are linked to words; for as we make uſe of ſigns to expreſs our mind, we often attend to words more than things; hence ariſes confuſion. Divines and heathens, as was ſaid, take the word *virtue* in a different ſenſe; we call the principle of nutrition the ſoul; and we alſo call the principle of thought the ſoul; and the principle of each the life: ſo ſenſe and ſenſation are equivocal terms; now when we ſee three things happen; *1ſt*, A motion in the brain, or eyes; *2dly*, Perception; *3dly*, Judgment; yet we call all theſe ſenſe, or ſenſation; whereas judgment is the chief; if a cane appears to be crooked in the water, the ſenſes are not miſtaken, but the judgment is; if the ſun appears ſmall, the ſenſes are not deceived, but the judgment is: all languages have equivocal words; however, an equivocal word, that has different ſenſes, cannot deceive us; *v. g. aries*, ſignifies a ram, and a ſtar; *canis* ſignifies a dog, and a ſtar too; but few are deceived here.

Then as to the remedy of confuſion, ariſing from the confuſion of names; of definitions of things and names, they ſay, we muſt uſe a new language, or other ſignifications, to aſcertain their meaning, in order to avoid equivocation; thus the ſoul is immortal; here the word *ſoul* muſt be conſtrued the principle of thought.

The definition of words differs from the definition of things: In the definition of things, we uſe a genus and a difference; but the definition of words is, giving their ſenſe, not their etymology; this is arbitrary, but the former is not ſo: *v. g.* if I ſay, a parallelogram has three angles equal to two right ones, this, tho' an error, makes no miſtake in the ſpeaker's meaning; but if it be ſaid, a parallelogram is a figure contained within three lines, whoſe lines are parallel, and yet affirm it, as before, 'tis a miſtake.

Diſputes on words are trifling, but on things are neceſſary; words on which all agree, admit of no diſpute, for then it is a principle; *v. g.* if I ſay, a *chimæra* implies a contradiction, however, a chimæra is nothing real; gravity is a principle, by which heavy things deſcend, yet there is nothing that can be called ſuch a principle in heavy bodies; many definitions of philoſophers may be denied; *quæſtiones de voce*, or diſputes upon terms are too common in ſchools, *v. g.* if by *heat*, I underſtand that which gives ſuch a ſenſation; or by *gravity*, I mean that bodies deſcend, no body denies theſe ſenſes; but if it is meant, that a quality, or an intrinſic principle is in the bodies, this admits of diſpute; ſo that the knowledge of the meaning of words cuts off diſputes. Words are uſeful to expreſs our meaning in ſciences, to avoid circumlocution; *v. g.* as we ſee numbers diviſible into two

equals;

equals; this we call an equal number, and uſe it in common ſpeech, to avoid conſtant circumlocutions.

As to the definition of words; *1ſt*, All names are not to be defined, as entity, thought, extenſion, equality, duration, time, *&c.* ſince all mankind agree what they are; ſo all men agree, that a horſe goes faſter than a ſnail; moreover ſome are primitives, and can't be defined; *2dly*, Known definitions are not to be chang'd; ſuch as geometricians uſe, *&c.* *3dly*, If there be a neceſſity to define, we muſt come as near to nature as is poſſible; and if there be two ſignifications, we muſt rob the one to make up the other; *v. g. heat* is ſenſe and quality, 'tis a ſenſation; but its cauſe we are ſilent of.

Old 'idea's we muſt retain, if we don't, we may call *Bara* a parallelogram: the chymiſts of old called the plague a ſaturnine diſeaſe, and ſaid it was curable by an amulet of lead; or, if the name of *Saturday* were appended; thus did they deceive mortals; nay, they were heretofore ſo fond, as to call themſelves, *the elect*, the holy nation, the people of God; but theſe deceits are now worn out.

As we often diſpute on terms, 'tis neceſſary to adjuſt their meaning; here Dictionaries are of great uſe; 'tis only ſome part, and not the whole extent of a word, that is diſputed; to ſignify, is to excite an idea; but this idea is either primary, or ſecondary; *v. g.* one ſays *you lye*; now the word *lye*, in its primary ſignification, only means, *you are miſtaken*; but in its ſecondary ſignification, it includes a contempt; theſe ſecondary *ideas*, leſſen, or augment, or change meanings, whether by ſpeech, looks, or geſtures; *v. g.* if a ſervant ſhould ſay, *Maſter, ſpeak low*; *I hear you very well*; would it not be thought, he ſpoke out o' time?

Hence ſome words are ſoft, others contumelious; ſome chaſte, others naughty; ſome modeſt, others bold; by reaſon of this adventitious idea.

Subſtantives differ from adjectives; *v. g.* if one ſays, *you are under a miſtake*; or, *you are ignorant*; the latter expreſſion is groſs, and includes a contempt; but if it's ſaid, *you are miſtaken*, then indeed 'tis the ſame, as *you are under a miſtake*; and theſe ſoft expreſſions men of ſenſe and breeding always uſe.

Hence rhetorical figures ruffle or excite more than a ſimple or a common manner of ſpeech; becauſe, beſides their primary meaning, they raiſe the affections of the mind; whereas the ſimple expreſſion only ſhews the naked truth; *Virgil* ſays, *uſque adeone miſerum eſt mori?* which differs widely from *non eſt uſque adeo miſerum mori*; for the laſt is plain and flat. The mind is inſtructed by ideas, but it is moved with a repreſentation of the paſſions, as

——— *ſi vis me flere dolendum eſt,*
Primùm ipſum tibi ———

A figu-

A figurative ſtyle moves the affections and paſſions; but a cold one does not affect us at all; ſo holy truths, when they are propoſed to be known, and when to be ador'd.

Hence the celebrated queſtion among the ancients, *Whether any words can be unchaſte?* is readily ſolved; for the ſecondary idea makes them ſo; words heretofore uſed by the prophets, &c. were then chaſte and pure; but cuſtom has added a ſecondary idea, by which they are impure and unlawful to be us'd; in which caſe, the diſcreet make uſe of circumlocutions, to avoid the imputation of wickedneſs.

At laſt, they give us two rules for definitions, *viz.*

1ſt, Leave nothing in your terms, either obſcure or equivocal, which may not be defin'd.

2dly, Uſe in your definitions terms either perfectly known, or well explain'd.

[*To be continued.*]

ARTICLE XLII.

LITERARY NEWS.

SWISSERLAND.

L'A grand Verité du Monde, &c. Or, *The great Truth of the World*; an univerſal ſyſtem of harmony, hitherto unheard of: by ſubſcription. In two Vol. in *4to.* with a great many figures; the price is four franks of *Swiſs* money, &c.

VIENNA.

Mr. *Salomon Kleiner*, engineer of his moſt eminent highneſs of *Mayene*, and the *Sieur Jeremy James Seldemair*, an ingenious engraver, have undertaken to publiſh a deſcription of the magnificent ſtructure of the imperial library, in copper-plates. Subſcriptions are taken in by *Glidiſch* at *Leipſic*, and the other principal bookſellers; the plates will have the deſcription of the apartments done in *German* and *Latin*. The ſubſcribers pay five florins advance-money, and five more upon receipt of the work; they who don't ſubſcribe, muſt pay fourteen florins for each.

FRANKFORT *upon the* MAINE.

A printed catalogue of medals, belonging to the late Mr. *Anthony Philip Glock*, which are put up to ſale. They are in all 3296, along with ſeveral other antiquities. Such as deſire to be better informed of the contents of the catalogue, and have a mind to purchaſe the whole, or any part thereof, may direct to Mr. *Henry de Barckhans*, ſenator, at *Frankfort*.

There

There has alſo appeared at *Wartheim*, a new tranſlation of the five books of *Moſes*. It is a ſort of paraphraſe, which the author calls a *free tranſlation*, with annotations; Dr. *Lauge*, profeſſor at *Hall*, has decry'd it with great vehemence.

STETTIN.

Capt. *Humbert* is writing a critical hiſtory of maps; he has got all materials ready for printing off the firſt part; the ſecond part will be ready by the time the firſt is finiſh'd. This work will be uſeful for ſuch as apply to geography; it will contain all modern geography, and ſome remarks how to diſtinguiſh good from bad maps, *&c.*

BREMEN.

Denis Krægel, doctor of phyſic, is made profeſſor of mathematics; and in his inaugural oration he took notice of the chief difficulties that attended the diſcovery of the longitude.

Mr. *Schumucher*, profeſſor of divinity, publiſhes from time to time academical diſſertations on the 16th *Pſalm*, which, when all is finiſh'd, will make a large commentary.

HAMBURGH.

Mr. *Schlægar* has lately publiſhed a long diſſertation, *de Diana Lyſizohne*. In this book he treats at large on the protection of the new-married and child-bed women, which the *Pagans* attributed to *Diana*; and occaſionally he explains divers paſſages of the Scriptures.

KIEL.

Mr. *Godfrey-Henry Fleud*, licentiate in the law, has publiſh'd a *Programma*, where he diſcuſſes the queſtion, *Whether a geometrical method be applicable to the ſtudy of the law?*

THE